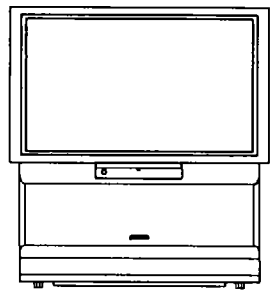
PIONEER®
The Art of Entertainment

Service Manual



ORDER NO.
ARP2932

PROJECTION COLOUR TELEVISION

SD-T50W1
SD-T43W1

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Type	Model		Power Requirement	Remarks
	SD-T50W1	SD-T43W1		
SL	○	○	AC110V/120-127V/220-230V/240V	

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This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING
Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5).
When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.

NOTICE
(FOR CANADIAN MODEL ONLY)
Fuse symbols -▮▭▭- (fast operating fuse) and/or -▮▭▭- (slow operating fuse) on PCB indicate that replacement parts must be of identical designation.

REMARQUE
(POUR MODÈLE CANADIEN SEULEMENT)
Les symboles de fusible -▮▭▭- (fusible de type rapide) et/ou -▮▭▭- (fusible de type lent) sur CCI indiquent que les pièces de remplacement doivent avoir la même désignation.

1. SAFETY PRECAUTIONS

NOTICE:Comply with all cautions and safety related notes located on or inside the cabinet and on the chassis or picture tube.
The following precautions should be observed:

1. Do not install, remove, or handle the picture tube in any manner unless shatterproof goggles are worn. People not so equipped should be kept away while picture tubes are handled.
   Keep picture tube away from the body while handling.
2. When service is required, even though the PROJECTION MONITOR RECEIVER an isolation transformer should be inserted between power line and the set in safety before any service is performed.
3. When replacing a chassis in the set, all the protective devices must be put back in place, such as barriers, nonmetallic knobs, adjustment and compartment covershields, isolation resistor-capacitor, etc.
4. When service is required, observe the original lead dress.
   Extra precaution should be taken to assure correct lead dress in the high voltage circuitry area.
5. Always use the manufacturer's replacement components. Especially critical components as indicated on the circuit diagram should not be replaced by other manufacture's.
   Furthermore where a short circuit has occurred, replace those components that indicate evidence of overheating.
6. Before returning a serviced set to the customer, the service technician must thoroughly test the unit to be certain that it is completely safe to operate without danger of electrical shock, and be sure that no protective device built into the set by the manufacturer has become defective, or inadvertently defeated during servicing.

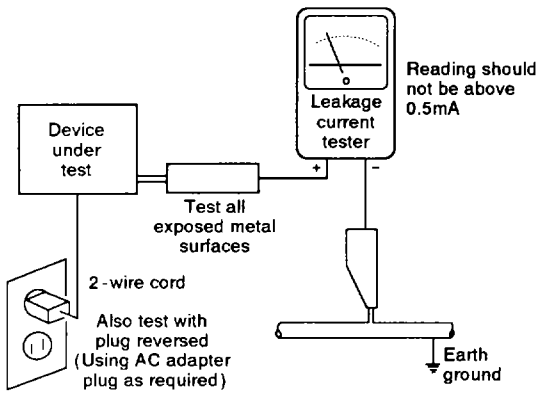
Therefore, the following checks should be performed for the continued protection of the customer and service technician.

Leakage Current Cold Check

With the AC plug removed from the 110/120 - 127/220 - 230/240V AC 50/60Hz source, place a jumper across the two plug prongs. Turn the AC power switch on. Using an insulation tester(DC 500V), connect one lead to the jumpered AC plug and touch the other lead to each exposed metal part(input/output terminals, screwheads, metal overlays, control shafts, etc.), particularly any exposed metal part having a return path to the chassis. Exposed metal parts having a return path to the chassis should have a minimum resistor reading of 0.3MΩ and a maximum resistor reading of 5MΩ . Any resistor value below or above this range indicates an abnormality which requires corrective action. Exposed metal parts not having a return path to the chassis will indicate an open circuit.

Leakage Current Hot Check

Plug the AC line cord directly into a 110/120 - 127/220 - 230/240V AC 50/60Hz outlet (do not use an isolation transformer for this check). Turn the AC power switch on. Using a "Leakage Current Tester(Simpson Model 229 equivalent)", measure for current from all exposed metal parts of the cabinet(input/output terminals, screwheads, metal overlays, control shaft, etc.), particularly any exposed metal part having a return path to the chassis, to a known earth ground(water pipe, conduit, etc.). Any current measured must not exceed 0.5mA.


Reading should not be above 0.5mA
Leakage current tester
Device under test
Test all exposed metal surfaces
2-wire cord
Also test with plug reversed (Using AC adapter plug as required)
Earth ground

AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE SET TO THE CUSTOMER.

High Voltage

This set is provided with a X-ray protection for clearly indicating that voltage has increased in excess of a predetermined value. Comply with all notes described in this Service Manual regarding this hold down circuit when servicing, so that this X-ray protection may correctly be operated.

Serviceman Warning

In the status of the black picture(video muting is being applied)when no signal is input, high voltage of this set during operation is less than 30.9kV. In case any component having some relation to the high voltage is replaced, confirm that the high voltage is lower than 30.9kV in the status of the black picture when no signal is input.

To measure H.V. use a high impedance H.V. meter.

Connect (-) to earth and (+) to the FBT anode cable connector. (Refer to page 145.)

X-radiation

TUBE: The primary source of X-radiation in this set is the picture tube.

For continued X-radiation protection, the replacement tube must be the same type as the original, PIONEER approved type.

The picture tube(CRT assy R, G, B)used in this set holds complete guarantee against X-ray radiation when the X-ray is sealed (See page 4). Accordingly, when the current in flowing to the picture tube(CRT assy R, G, B), be sure to perform it by putting the tube into X-ray sealed applied state. Avoid absolutely to flow the current to the picture tube (CRT assy R, G, B) itself. Moreover, when the voltage of the high voltage circuit becomes abnormally a little higher, the picture tube radiates X-rays. Accordingly, when servicing the high voltage circuit be sure to replace as an assy with the POWER SUPPLY assy in the manner in which has been adjusted to perform normal operation.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in PIONEER set have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which does not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, X-radiation, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

3. CHARGED SECTION, HIGH VOLTAGE GENERATING POINT AND X-RAY PROTECTION

■ Charged section

The circuit in which the commercial AC power is used as it is without passing through the power supply transformer. If the charged section is touched, there is a risk of electric shock. In addition, the measuring equipment can be damaged if it is connected to the GND of the charged section and the GND of the non-charged section while connecting the set directly to the commercial AC power supply. In this case, be sure to connect the set via an insulated transformer and supply the current.

■ Charged section (Power supply primary side)

1. The primary side of the POWER SUPPLY assy
2. AC power cord
3. MAIN POWER switch (S2)
4. AC inlet
5. AC IN assy
6. Voltage selector (S1)
7. Power transformer (T1)

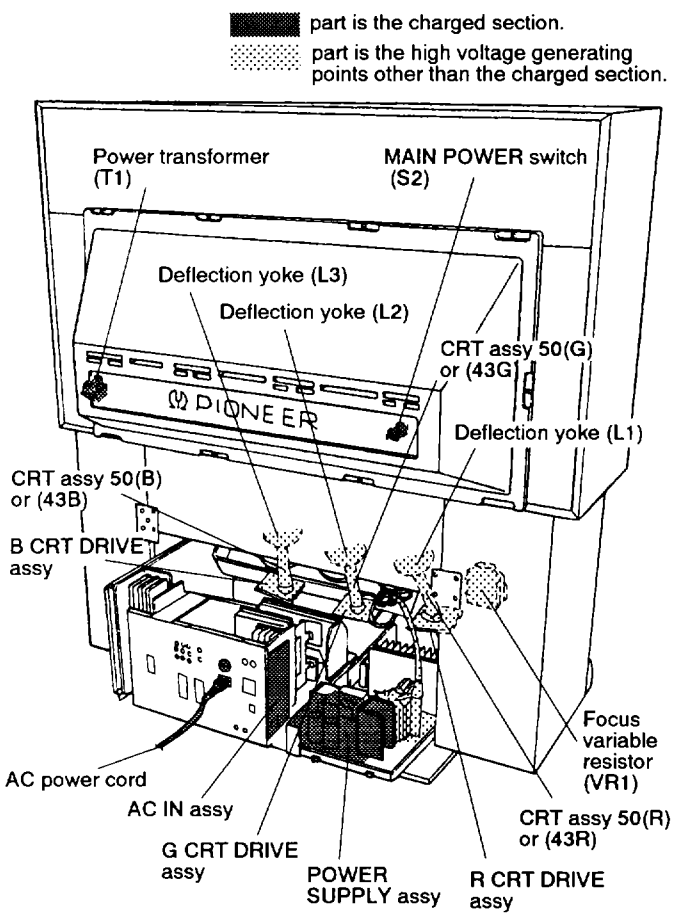

part is the charged section.
part is the high voltage generating points other than the charged section.
Power transformer (T1)
MAIN POWER switch (S2)
Deflection yoke (L3)
Deflection yoke (L2)
CRT assy 50(G) or (43G)
PIONEER
Deflection yoke (L1)
CRT assy 50(B) or (43B)
B CRT DRIVE assy
Focus variable resistor (VR1)
AC power cord
AC IN assy
G CRT DRIVE assy
POWER SUPPLY assy
R CRT DRIVE assy
CRT assy 50(R) or (43R)

Fig. 1 Charged section and high voltage generating section

■ High voltage generating point

The place where voltage of over 100V is generated.

1. Charged section
2. POWER SUPPLY assy (including FBT) (30.5kV, 135V)
3. R. CRT DRIVE assy (10.5kV)
4. G. CRT DRIVE assy (10.5kV)
5. B. CRT DRIVE assy (10.5kV)
6. CRT assy R (30.5kV)
7. CRT assy G (30.5kV)
8. CRT assy B (30.5kV)
9. Focus variable resistor (VR1) (10.5kV)
10. Deflection yokes (L1, L2, and L3) (Approx. 1100V at peak)

■ X-ray protection

- Regarding the parts which are relative to radiation of X-rays (There is the danger to radiate X-ray from the individual CRT assy R, G, B), there are notifications of caution in the individual schematic diagrams. Be sure to read them for safety's sake.
- The component parts for X-ray protection are as follows :When the current flows to the CRT assy R, G, B, be sure to perform it with these parts being attached. Protection from the X-ray radiation is maintained in the state in which these parts have been installed to the CRT assy R, G, B. Accordingly, never supply current only to the CRT assy R, G, B.
  Moreover, the anode voltage of the CRT assy R, G, B should always be kept not higher than the predetermined value (in the minimum brightness and picture state when non signal input is higher than 30.9kV). Be sure to drive the CRT assy R, G, B by using a completely functional POWER SUPPLY assy which have been adjusted completely in the combined state. (When the voltage abnormally becomes high, the X-ray protection circuit will operate.)

1. CRT assy R, G, B(Do not dismantle CRT assemblies under any circumstances).
2. Each Lens assy

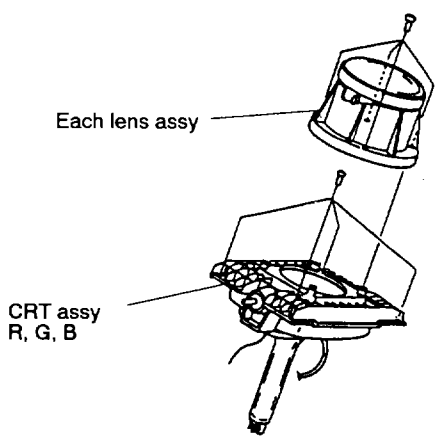


Fig. 2 Component parts for X-ray protection

4. EXPLODED VIEWS, PACKING AND PARTS LIST

NOTES:

- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *Parts marked by ☆ are important parts which relate to X-rays radiation.*
  If any of these parts need to be replaced, always replace with specified parts.

4.1 PARTS LIST

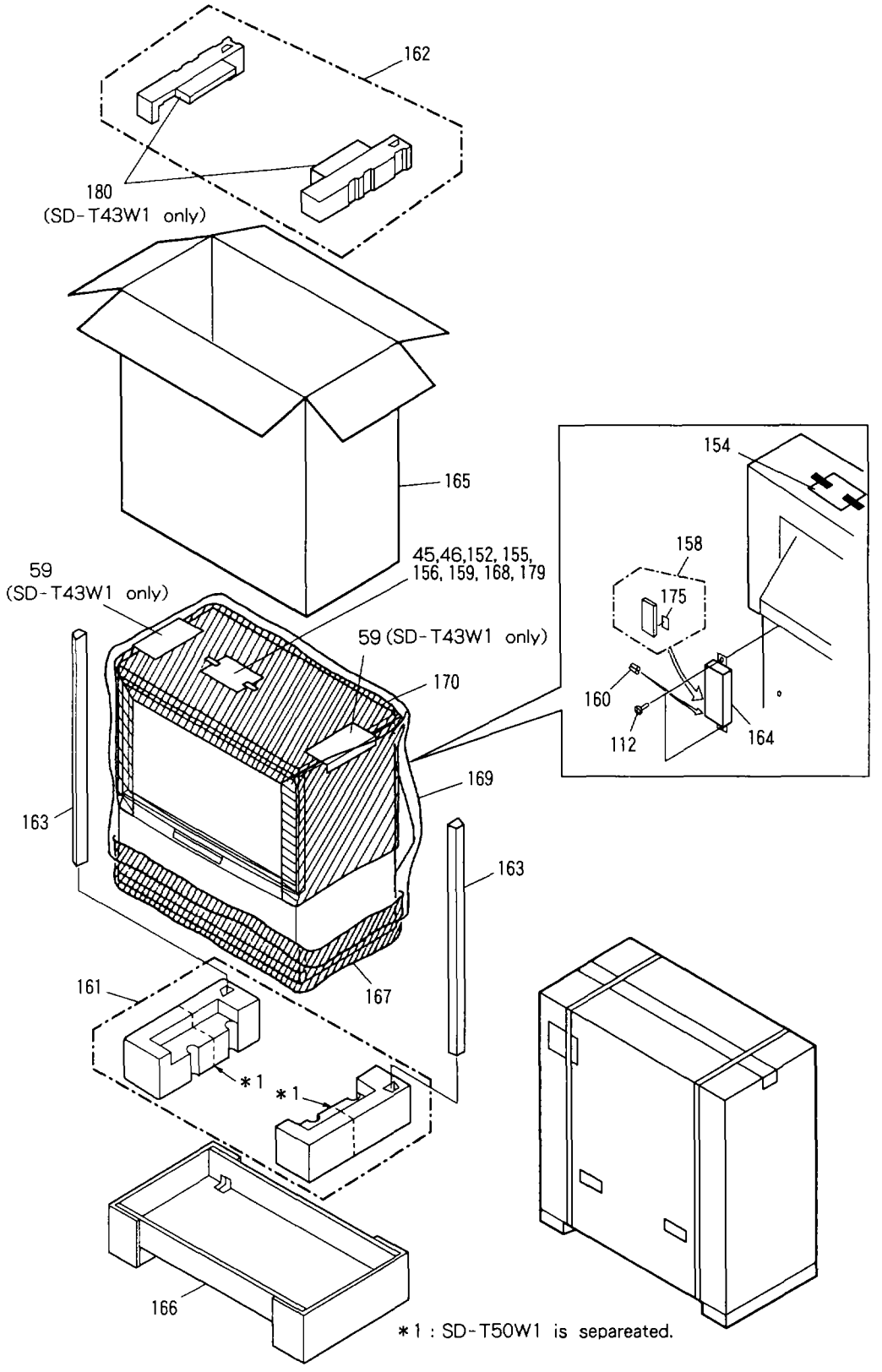
Mark	No.	Description	Part No.
	1	CONVERGENCE ASSY	AWV1520
	2	VIDEO•UCOM ASSY	AWV1542
	3	TUNER ASSY	AWZ6075
	4	R CONV DAC ASSY (SD-T50W1)	AWZ6076
	4	R CONV DAC ASSY (SD-T43W1)	AWZ6152
	5	G CONV DAC ASSY (SD-T50W1)	AWZ6077
	5	G CONV DAC ASSY (SD-T43W1)	AWZ6153
	6	B CONV DAC ASSY (SD-T50W1)	AWZ6078
	6	B CONV DAC ASSY (SD-T43W1)	AWZ6154
	7	A CONNECTOR ASSY	AWZ6079
	8	B CONNECTOR ASSY	AWZ6080
	9	C CONNECTOR ASSY	AWZ6081
	10	AV I/O ASSY	AWZ6082
	11	FRONT CONTROL ASSY	AWZ6083
	12	AV2 ASSY	AWZ6084
NSP	13	S TERMINAL ASSY	AWZ6085
	14	AUDIO ASSY	AWZ6086
	15	R CRT DRIVE ASSY	AWZ6087
	16	G CRT DRIVE ASSY	AWZ6088
	17	B CRT DRIVE ASSY	AWZ6089
	18	AC IN ASSY	AWZ6090
	19	Y/C ASSY	AWZ6091
	20	D CONNECTOR ASSY	AWZ6092
	21	POWER DOWN ASSY	AWZ6093
	22	RELAY DRIVE ASSY	AWZ6094
☆	23	POWER SUPPLY ASSY	AWV1546
	24	DIGITAL ASSY	AWV1548
	25	DOOR	AAN1416
	26	CONTROL PANEL	AMB2524
	27	• • • • •	
⚠	28	VR1 FOCUS VR	ACX1082
⚠	29	C1, C2 CKA (4700P/AC250V)	ACG7009
⚠	30	L1 DEFLECTION YOKE	ATL1112
⚠	31	L2 DEFLECTION YOKE	ATL1112
⚠	32	L3 DEFLECTION YOKE	ATL1112
⚠	33	T1 POWER TRANSFORMER	ATS1555
⚠	34	S1 VOLTAGE SELECTOR	AKX7001
⚠	35	S2 POWER SWITCH	ASG1082
⚠	36	1P AC INLET	AKP1021
NSP	37	PAL SOCKET	AKX-202
⚠	38	FU106 FUSE(T800mA, 250V)	AEK-507
⚠	39	FU102 FUSE(T4A, 250V)	AEK-514
⚠	40	FU105 FUSE(T4A, 250V)	AEK-514
⚠	41	FU107 FUSE(T6.3A, 250V)	AEK-516
⚠	42	FU901 FUSE(T6.3A, 250V)	AEK1039
	43	SPEAKER 66 (SD-T50W1 ONLY)	D66AP45-56L
	44	SPEAKER 12 (SD-T50W1)	SWM1030
	44	SPEAKER 12 (SD-T43W1)	B13DC65-51DW
⚠	45	AC POWER CORD	ADG1107
⚠	46	AC POWER CORD	ADG1109
	47	J2 1P LEAD WIRE	ADX1307
	48	J3 1P LEAD WIRE	ADX1308
	49	J4 1P LEAD WIRE	ADX1309
⚠	50	J5 1P LEAD WIRE	ADX1310
	51	J8 4P HOUSING WIRE	ADX1315
⚠	52	J7 1P LEAD WIRE	ADX2173
⚠	53	J6 1P LEAD WIRE	ADX2174
	54	J9 8P LEAD WIHT HOUSING (SD-T50W1)	ADX2221
	54	J9 8P LEAD WIHT HOUSING (SD-T43W1)	ADX2222
	55	J18 WIRE HARNESS A	ADX2242
	56	J19 WIRE HARNESS B	ADX2243
	57	J10 3P LEAD WIHT HOUSING	ADX2244
	58	J11 WIRE HARNESS C	ADX2245
	59	PAPER SHEET (50) (SD-T43W1 ONLY)	AHB1151
☆	60	LENS ASSY (40) (SD-T43W1 ONLY)	AMR2604
	61	VIDEO BOARD ASSY (SD-T43W1 ONLY)	AMR2873
NSP	62	FRONT COVER PANEL (SD-T43W1 ONLY)	ANG1953
	63	SCREW (SD-T43W1 ONLY)	BYC40P180FMC
	64	SCREW (SD-T43W1 ONLY)	VPZ30P080FMC
⚠	65	J1 ANODE CABLE	ADY1012
NSP	66	CONVER CHASSIS	ANA1493
NSP	67	CRT FRONT FRAME (50) (SD-T50W1)	ANA1511
NSP	67	CRT FRONT FRAME (SD-T43W1)	ANA1494
NSP	68	CRT REAR FRAME (50) (SD-T50W1)	ANA1512
NSP	68	CRT REAR FRAME (SD-T43W1)	ANA1495
NSP	69	CHASSIS ASSY	ANA1526
	70	REAR PANEL (SD-T50W1)	ANC2276
	70	REAR PANEL (SD-T43W1)	ANC2277
NSP	71	BACK COVER PLATE	ANE1529
	72	CASTER	AMR2729

Mark	No.	Description	Part No.
NSP	73	PCB FRAME	ANG1849
NSP	74	SWITCH HOLDER	ANG1945
NSP	75	MIRROR UPPER STAY L	ANG1946
NSP	76	MIRROR UPPER STAY C	ANG1947
NSP	77	MIRROR UPPER STAY R	ANG1948
NSP	78	MIRROR UNDER STAY	ANG1949
NSP	79	VR HOLDER	ANG1956
NSP	80	SCREEN HOLDER H (50) (SD-T50W1)	ANG2029
NSP	80	SCREEN HOLDER H (43) (SD-T43W1)	ANG2025
NSP	81	SCREEN HOLDER V (50) (SD-T50W1)	ANG2030
NSP	81	SCREEN HOLDER V (43) (SD-T43W1)	ANG2026
NSP	82	SCREEN HOLDER UH (50) (SD-T50W1)	ANG2031
NSP	82	SCREEN HOLDER UH (43) (SD-T43W1)	ANG2027
NSP	83	AC IN ASSY HOLDER	ANG2060
NSP	84	CORD PLATE	ANG2061
NSP	85	PCB HOLDER (S)	ANG2062
NSP	86	BOTTOM RAIL HOLDER (SD-T50W1 ONLY)	ANG2082
	87	SHIELD COVER	ANH1166
	88	NYLON BINDER	AEC-093
	89	RIVET	AEC-441
	90	BINDER	AEC-826
	91	CATCHER	AEC1012
NSP	92	PURSE LOCK S	AEC1261
NSP	93	NYLON CLAMPER	AEC1321
NSP	94	CABLE CLIP	AEC1369
NSP	95	PURSE LOCK L	AEC1422
	96	PURSE LOCK	AEC1540
	97	SPACER (PVC)	AEC1594
	98	RIVET (PLASTIC)	AEC1608
	99	SCREEN SPACER 50(PVC) (SD-T50W1)	AEC1641
	99	SCREEN SPACER(PVC) (SD-T43W1)	AEC1639
	100	CUSHION A	AEC1643
	101	CUSHION B	AEC1644
	102	SPACER(PVC)(SD-T50W1 ONLY)	AEC1652
	103	SPACER (PVC)	AEC1654
	104	BINDER	AEP-215
	105	RIVET (PLASTIC)	AEP-236
NSP	106	LEAD CLAMPER	AEP-329
	107	FRESNEL(50W) (SD-T50W1)	AMR2788
	107	FRESNEL(43W) (SD-T43W1)	AMR2778
	108	LENTICULAR SHEET(50W) (SD-T50W1)	AMR2858
	108	LENTICULAR SHEET(43W) (SD-T43W1)	AMR2685
☆	109	LENS ASSY (G) (SD-T50W1 ONLY)	AMR2388
☆	110	LENS ASSY (B) (SD-T50W1 ONLY)	AMR2389

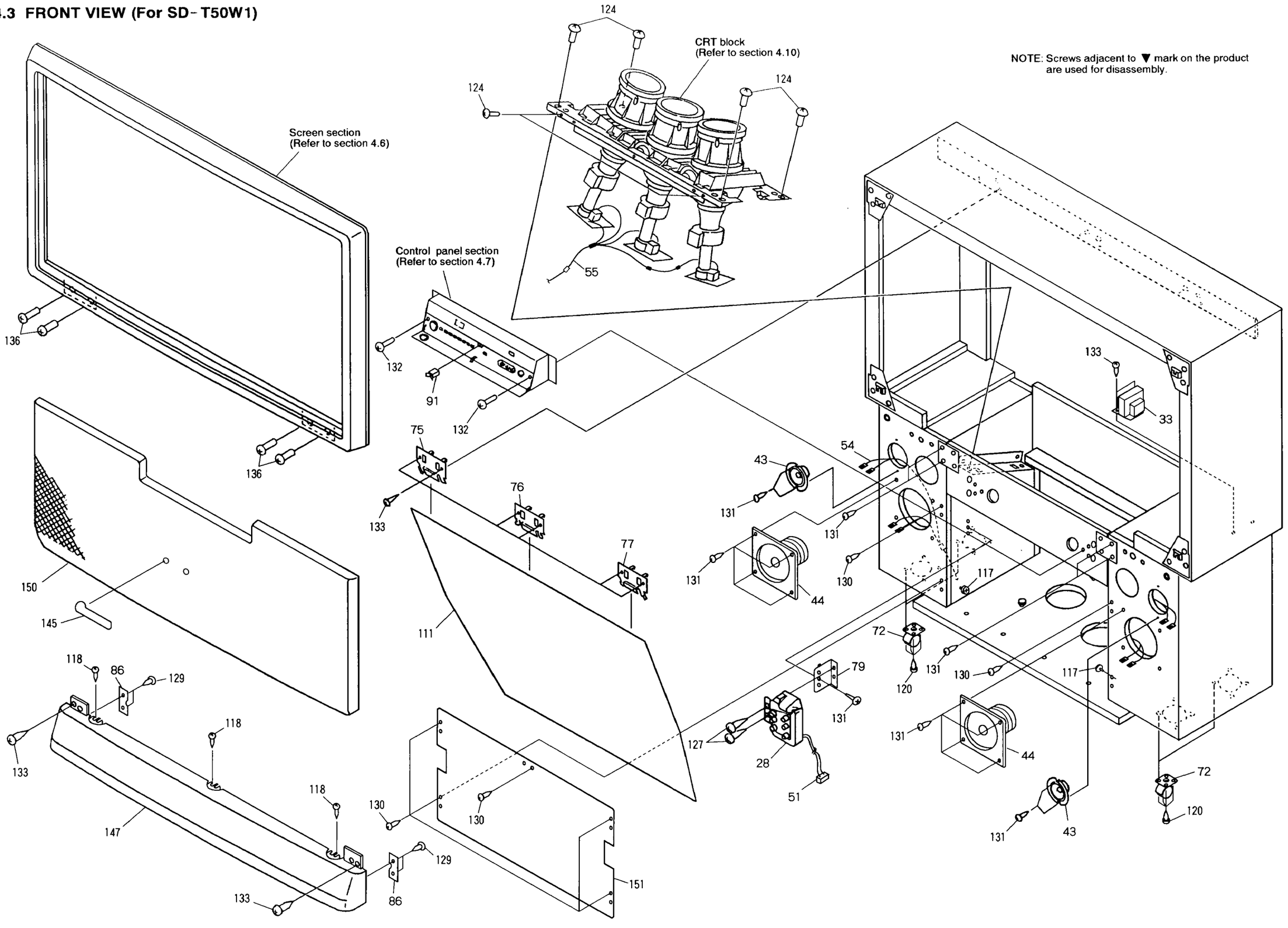
Mark	No.	Description	Part No.
	111	MIRROR (SD-T50W1)	AMR2859
	111	MIRROR (43) (SD-T43W1)	AMR2813
	112	SCREW (STEEL)	ABA1020
	113	SCREW (STEEL)	ABA1089
	114	SCREW	ABA1099
	115	SPECIAL SCREW	ABA1121
	116	• • • • •	
	117	SPECIAL SCREW(FE) (SD-T50W1 ONLY)	ABA1198
	118	SCREW	ABA1215
	119	SCREW	ABA1224
	120	SCREW (SD-T50W1)	BYC40P250FMC
	120	SCREW (SD-T43W1)	BYC40P120FZK
	121	HEXAGONAL DUCT NUT	ABN-087
	122	SCREW	ABZ30P080FZK
	123	SCREW	ABZ40P120FMC
	124	SCREW	ACZ40P080FMC
	125	SCREW	AMZ40P080FZK
	126	SCREW	BBZ30P080FCU
	127	SCREW	BBZ30P080FZK
	128	SCREW	BBZ30P100FMC
	129	SCREW (SD-T50W1 ONLY)	BYC35P120FZK
	130	SCREW (SD-T50W1 ONLY)	BYC35P160FZK
	131	SCREW	BYC40P120FZK
	132	SCREW	BYC40P140FZK
	133	SCREW	BYC40P160FMC
	134	SCREW	FBT40P120FZK
	135	SCREW	PMB30P080FZK
	136	SCREW	PMB50P250FZB
	137	SCREW	PPZ40P120FMC
	138	SCREW	PYC40T140FZB
	139	SCREW	VBT30P080FZK
	140	SCREW	VCZ30P060FMC
	141	SCREW	VPZ40P120FMC
NSP	142	TRAY (PLS)	AMR2563
	143	CONTROL SHEET	AAK2668
	144	INDICATOR PANEL(SD-T50W1)	AAK2669
	144	INDICATOR PANEL(SD-T43W1)	AAK2670
	145	BADGE (SD-T50W1 ONLY)	AAM1068
	146	SCREEN FRAME(50) (SD-T50W1)	AMB2592
	146	SCREEN FRAME(43) (SD-T43W1)	AMB2571
	147	BOTOM RAIL 51 (SD-T50W1)	AMR2861
	147	BOTOM RAIL (43)(SD-T43W1)	AMR2860
	148	• • • • •	
	149	MIRROR CASE	AME2292
	150	GRILLE 51 (SD-T50W1)	AMR2711
	150	GRILLE ASSY(43)(SD-T43W1)	AMR2688
NSP	151	BLIND PLATE(SD-T50W1 ONLY)	AMR2794
	152	OPERATING INSTRUCTIONS (ENGLISH)	ARB1500
	153	• • • • •	
NSP	154	CONVER CAUTION	ARM1113
NSP	155	CAUTION LABEL 220V	ARR1002
NSP	156	WARRANTY CARD	ARW1020
	157	• • • • •	

Mark	No.	Description	Part No.
	158	REMOTE CONTROL UNIT (CU-SD097)	AXD1424
	159	CASTER PLATE	AEC1025
NSP	160	BATTERY(R03, AAA)	AEX-021
	161	UNDER PAD ASSY (SD-T50W1)	AHA2093
	161	UNDER PAD ASSY (SD-T43W1)	AHA2034
	162	UPPER PAD ASSY (SD-T50W1)	AHA2094
	162	UPPER PAD ASSY (SD-T43W1)	AHA2035
	163	CYLINDRICAL SUPPORT (SD-T50W1)	AHB1168
	163	CYLINDRICAL SUPPORT (SD-T43W1)	AHB1142
NSP	164	CU PACKING CASE	AHC1027
	165	UPPER CARTON (SD-T50W1)	AHD2846
	165	UPPER CARTON (SD-T43W1)	AHD2847
	166	UNDER CARTON (SD-T50W1)	AHD2866
	166	UNDER CARTON (SD-T43W1)	AHD2811
NSP	167	PACKING SHEET	AHG1036
NSP	168	MANUAL BAG	AHG1083
NSP	169	VINYL SEAT L	AHG1110
NSP	170	PACKING SHEET	AHG1232
	171	• • • • •	
⚠☆	172	CRT ASSY 50(B) (SD-T50W1)	AWY1349
⚠☆	172	CRT ASSY (43B) (SD-T43W1)	AWY1303
⚠☆	173	CRT ASSY 50(G) (SD-T50W1)	AWY1369
⚠☆	173	CRT ASSY (43G) (SD-T43W1)	AWY1304
⚠☆	174	CRT ASSY 50(R) (SD-T50W1)	AWY1370
⚠☆	174	CRT ASSY (43R) (SD-T43W1)	AWY1305
	175	BATTERY COVER	AZN2237
	176	SCREW (SD-T43W1 ONLY)	ABZ40P120FZK
	177	BLIND SPACER(PVC) (SD-T43W1 ONLY)	AEC1605
	178	CUSHION C (SD-T43W1 ONLY)	AEC1645
	179	BIND (SD-43W1 ONLY)	AED1161
NSP	180	PAD (SD-T43W1 ONLY)	AHA2073

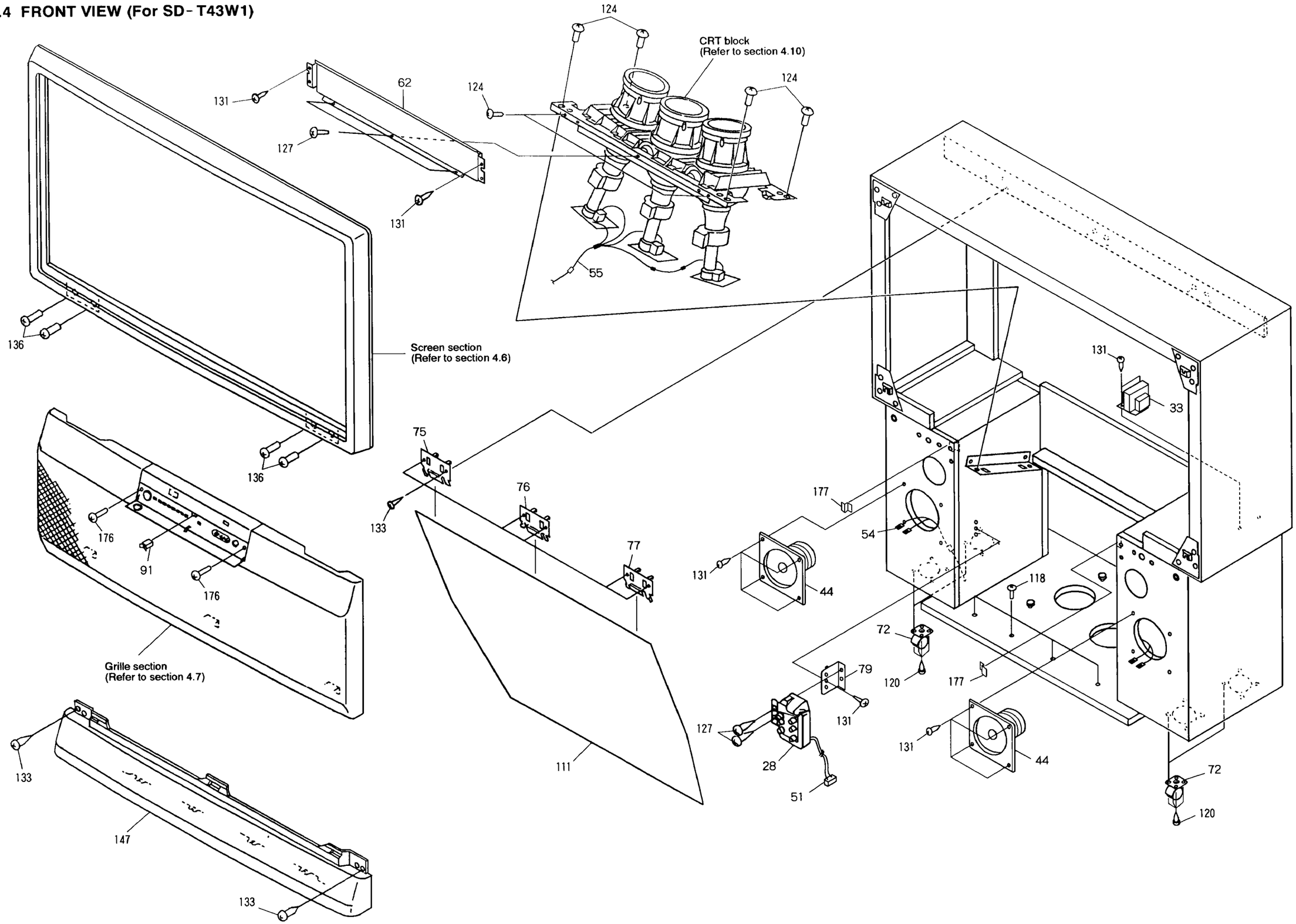
4.2 PACKING


162
180
(SD-T43W1 only)
165
45,46,152, 155,
156, 159, 168, 179
59
(SD-T43W1 only)
59 (SD-T43W1 only)
170
154
158
175
160
112
164
169
163
163
161
*1
*1
167
166
*1 : SD-T50W1 is separeated.

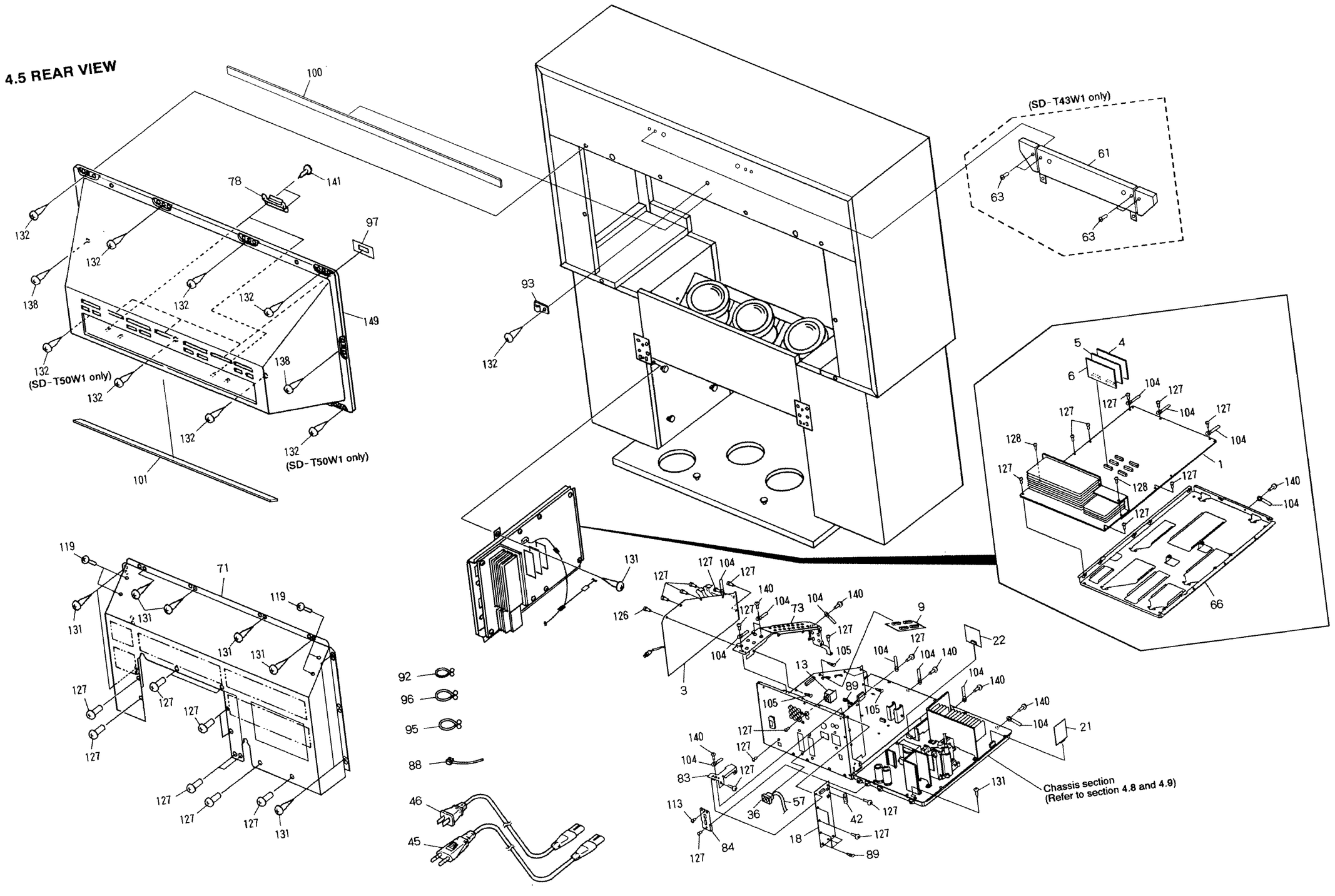
4.3 FRONT VIEW (For SD-T50W1)



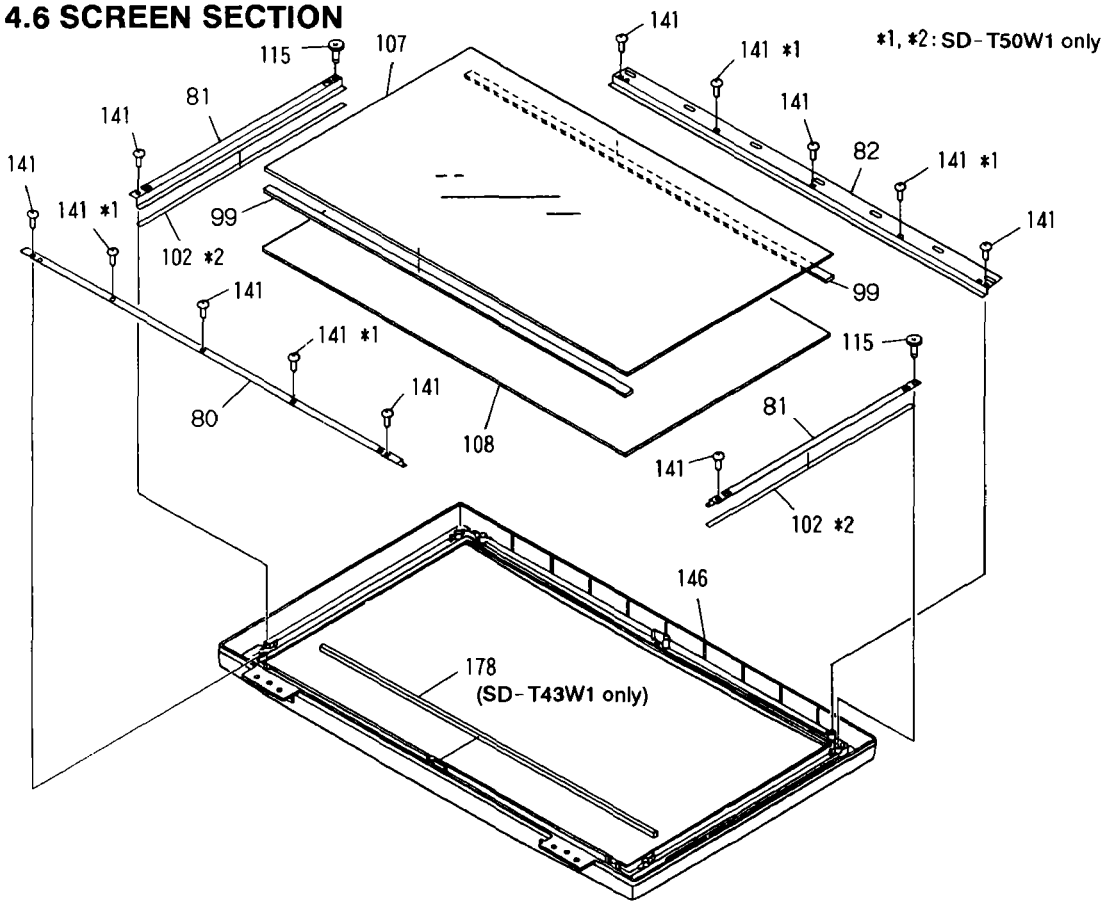
4.4 FRONT VIEW (For SD-T43W1)



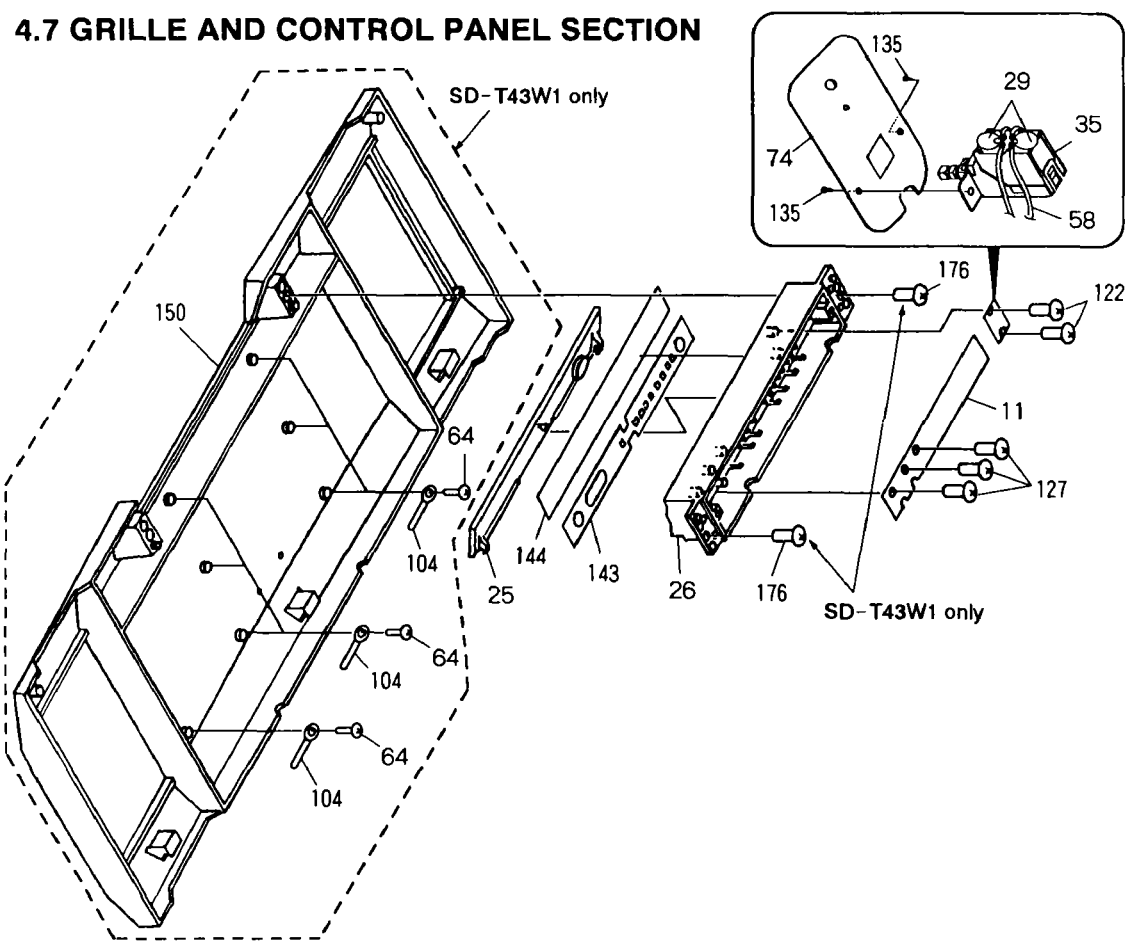
4.5 REAR VIEW


100
78
141
97
132
138
149
93
(SD-T43W1 only)
61
63
(SD-T50W1 only)
101
(SD-T50W1 only)
Chassis section
(Refer to section 4.8 and 4.9)
66
71
119
131
127
92
96
95
88
46
45
126
73
9
22
21
13
89
105
140
104
83
113
84
57
36
42
18
3

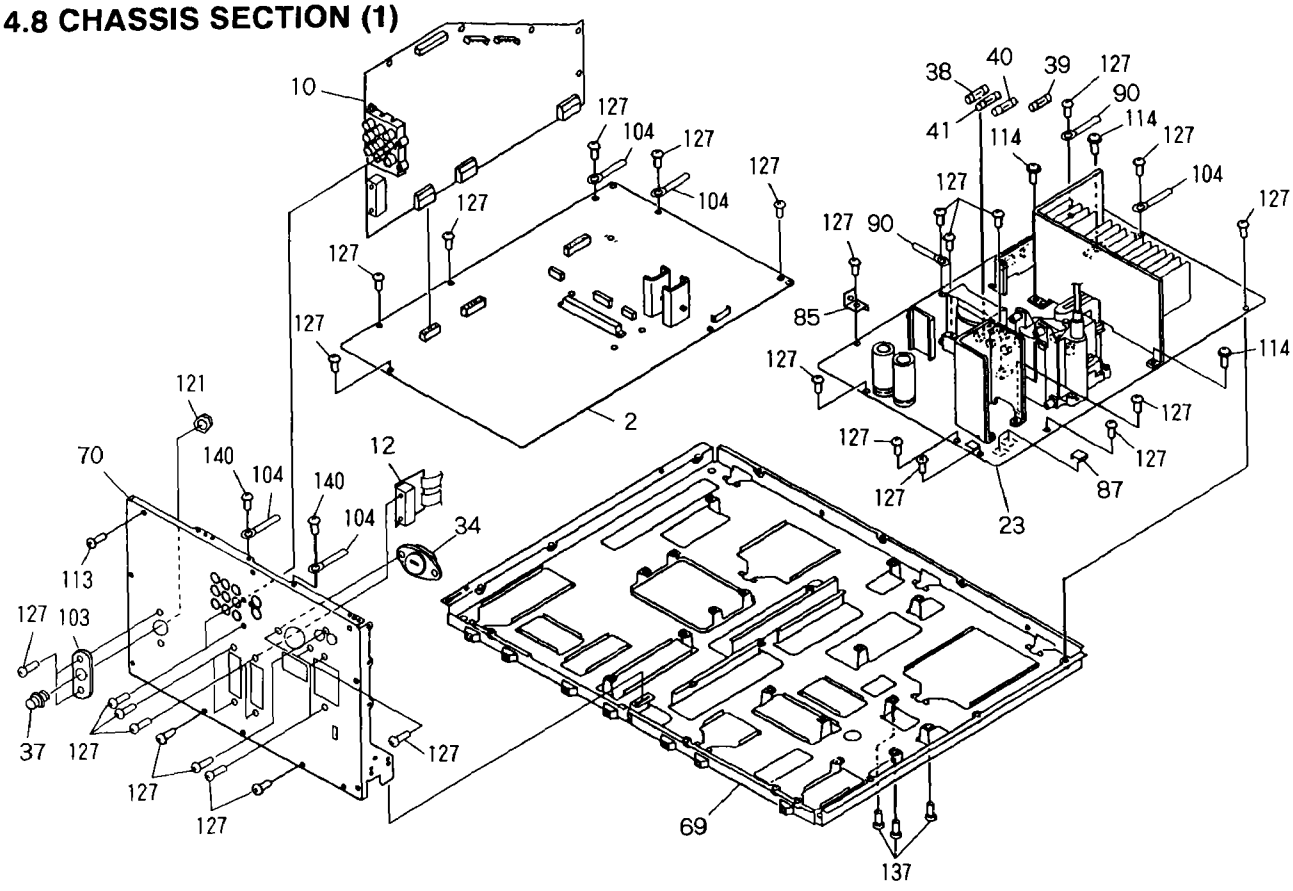
4.6 SCREEN SECTION



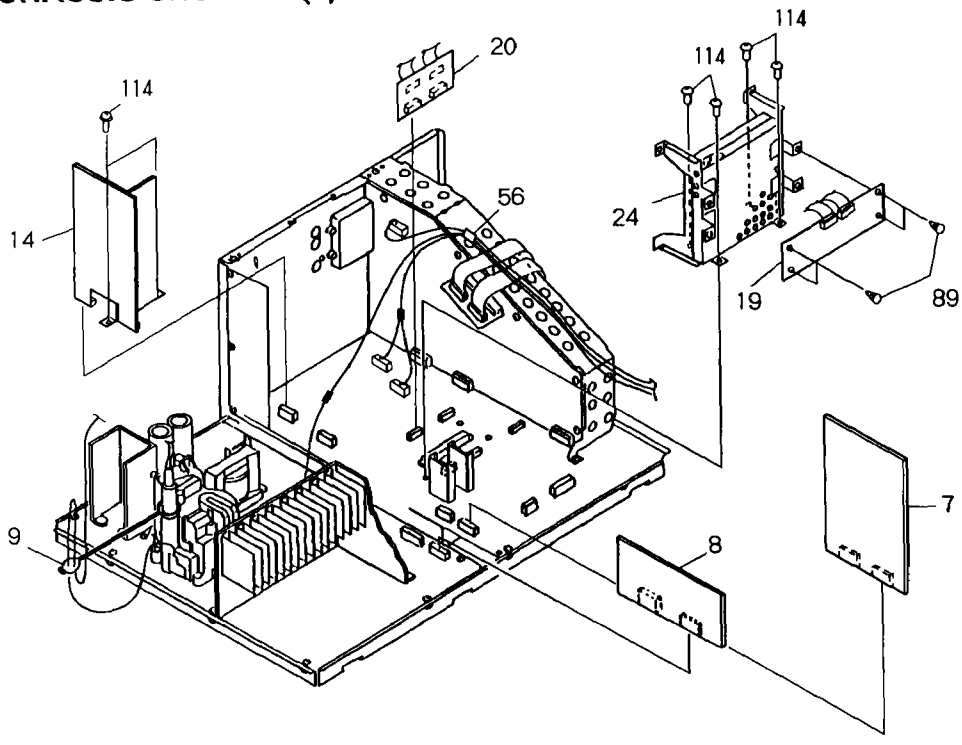
4.7 GRILLE AND CONTROL PANEL SECTION



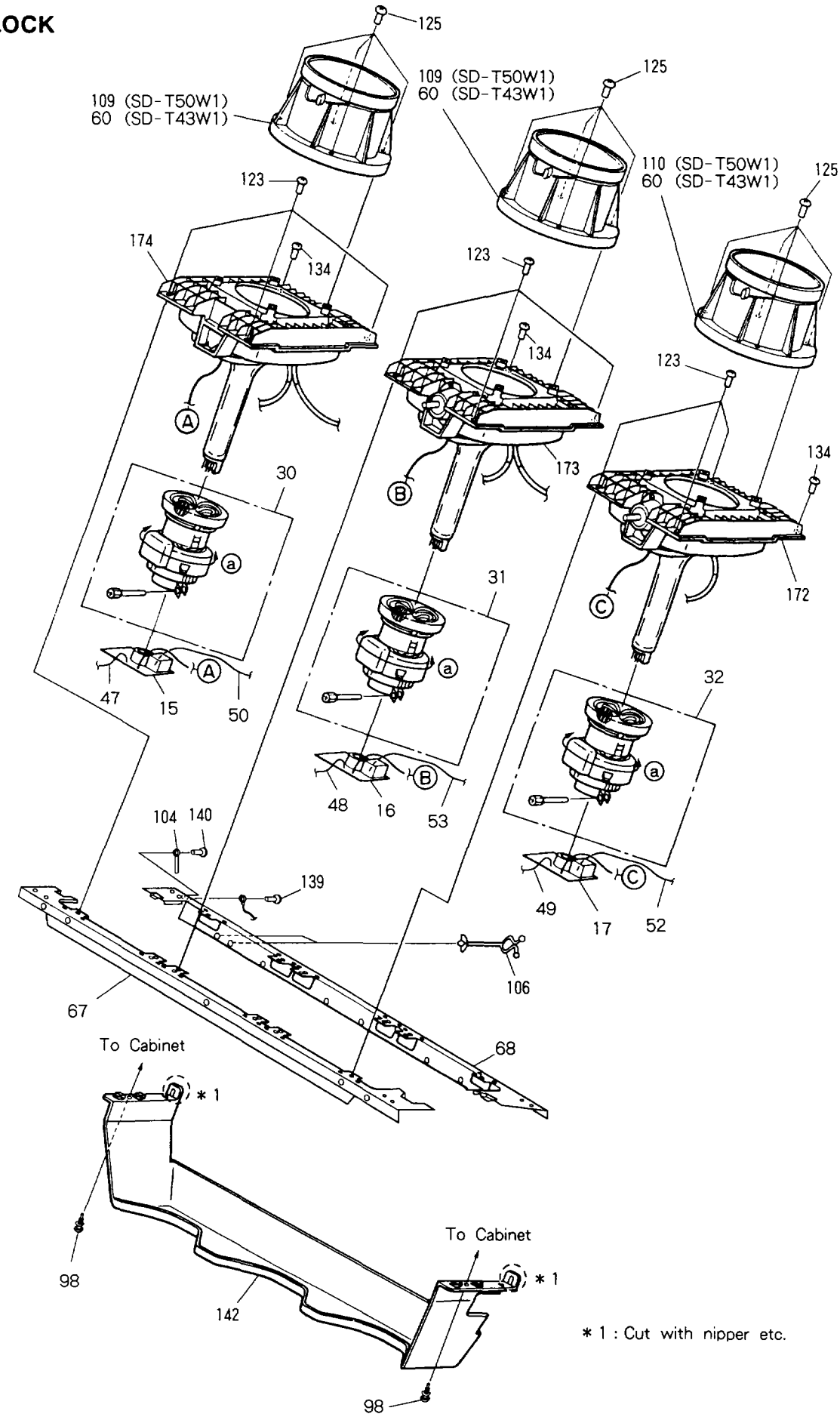
4.8 CHASSIS SECTION (1)



4.9 CHASSIS SECTION (2)



4.10 CRT BLOCK



* 1 : Cut with nipper etc.

5. SCHEMATIC AND PCB CONNECTION DIAGRAMS

NOTE FOR SCHEMATIC DIAGRAMS

(Type 5A)

1. When ordering service parts, be sure to refer to "PARTS LIST of EXPLODED VIEWS" or "PCB PARTS LIST".

2. Since these are basic circuits, some parts of them or the values of some components may be changed for improvement.

3. RESISTORS:
Unit: k:kΩ, M:MΩ, or Ω unless otherwise noted.
Rated power: 1/4W, 1/6W, 1/8W, 1/10W unless otherwise noted.
Tolerance:(F): ± 1%, (G): ± 2%, (K): ± 10%, (M): ± 20% or ± 5% unless otherwise noted.

4. CAPACITORS:
Unit : p:pF or μF unless otherwise noted.
Ratings : capacitor (μF) / voltage (V) unless otherwise noted.
Rated voltage : 50V except for electrolytic capacitors.

5. COILS:
Unit : m:mH or μH unless otherwise noted.

6. VOLTAGE AND CURRENT:
⊏ or ▪ V :
DC voltage (V) at no input signal unless otherwise noted.
Value in ( ) is DC voltage at color bar signal input state.
⇦mA or ←mA :
DC current at no input signal unless otherwise noted.

7. OTHERS:
- ⊘ or ● : Adjusting point.
- ◀ : Measurement point.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the parts. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by ☆ are important parts which relate to X-rays radiation. If any of these parts needs to be replaced, always replace with specified parts.
- Parts marked by × are important parts which relate to X-rays radiation. If a failure occurs in any of these parts, replace the printed circuit board assembly where the relevant part has already been adjusted as a working component. Do not replace the actual part itself. If any part marked by × is replaced, there is danger of being exposed to X-rays.

8. SCH - ⬚ ON THE SCHEMATIC DIAGRAM:
- SCH-⬚ indicates the drawing number of the schematic diagram.

(SCH stands for schematic diagram.)

9. SWITCHES (Underline indicates switch position) :

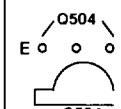
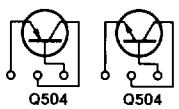
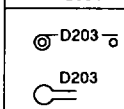
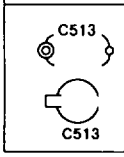
AUDIO ASSY
S3701 : SPEAKER SELECTOR INT—EXT

FRONT CONTROL ASSY
S3901 : FINE TUNE - (▽)
S3902 : VOL + (◿)
S3903 : RESET
S3904 : FACTORY ADJ
S3905 : PR - (▽)
S3906 : PR + (△)
S3907 : VOL - (◿)
S3908 : STANDBY/ON (⏻)
S3909 : INPUT (⮌)
S3911 : FINE TUNE + (△)

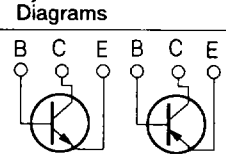
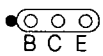
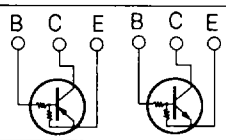
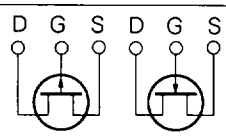
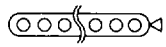
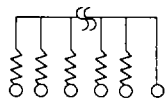
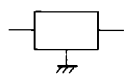
OUTSIDE OF PCB ASSY
S1 : VOLTAGE SELECTOR
AC110V—120-127V—220-230V—240V
S2 : MAIN POWER

NOTE FOR PCB DIAGRAMS:

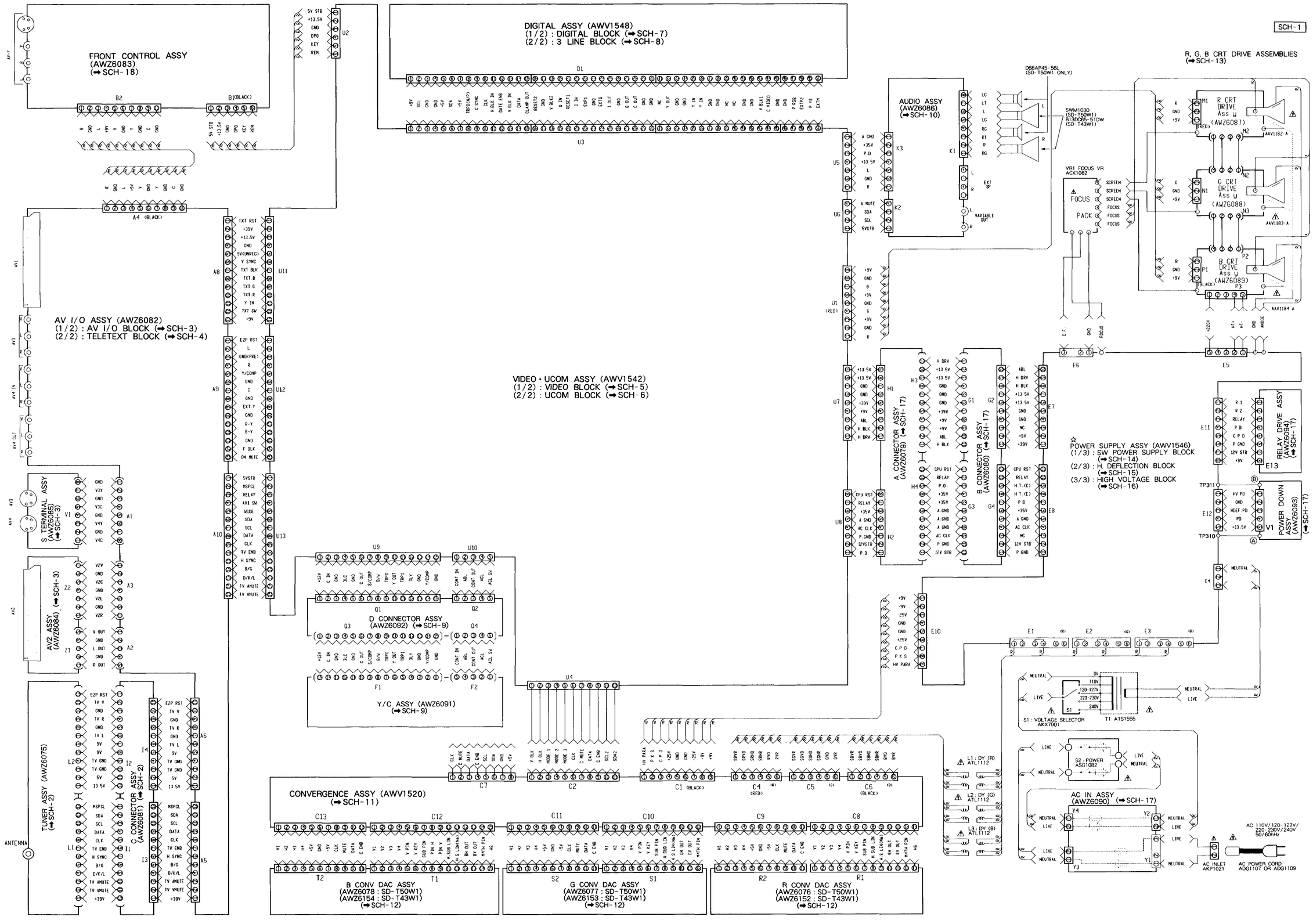
1. Part numbers in PCB diagrams match those in the schematic diagrams.
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

Symbol in PCB Diagrams	Symbol in Schematic Diagrams	Part Name
		Transistor
		Diode
		Capacitor (Polarized)

3. The transistor terminal marked with E or ⊏ shows the emitter.
4. The diode terminal marked with ◎ or ⊂ shows cathode side.
5. The capacitor terminal marked with ◎ or ⊏ shows negative terminal.
6. The parts mounted on each PCB include all necessary parts for several destinations. For further information for respective destinations, be sure to check with the schematic diagram.

Symbol in PCB Diagrams	Symbol in Schematic Diagrams	Part Name
		Transistor
		Transistor with resistor
		Field effect transistor
		Resistor array
		3-terminal regulator

5.1 OVERALL WIRING DIAGRAM


SCH-1
FRONT CONTROL ASSY (AWZ6083) (➡SCH-18)
DIGITAL ASSY (AWV1548)
(1/2) : DIGITAL BLOCK (➡SCH-7)
(2/2) : 3 LINE BLOCK (➡SCH-8)
R, G, B CRT DRIVE ASSEMBLIES (➡SCH-13)
AUDIO ASSY (AWZ6086) (➡SCH-10)
D66AP45-56L (SD-T50W1 ONLY)
SWM1030 (SD-T50W1) B13DC65-51DW (SD-T43W1)
R CRT DRIVE Ass'y (AWZ6087)
G CRT DRIVE Ass'y (AWZ6088)
B CRT DRIVE Ass'y (AWZ6089)
VR1 FOCUS VR ACX1082
AV I/O ASSY (AWZ6082)
(1/2) : AV I/O BLOCK (➡SCH-3)
(2/2) : TELETEXT BLOCK (➡SCH-4)
VIDEO・UCOM ASSY (AWV1542)
(1/2) : VIDEO BLOCK (➡SCH-5)
(2/2) : UCOM BLOCK (➡SCH-6)
A CONNECTOR ASSY (AWZ6079) (➡SCH-17)
B CONNECTOR ASSY (AWZ6080) (➡SCH-17)
☆ POWER SUPPLY ASSY (AWV1546)
(1/3) : SW POWER SUPPLY BLOCK (➡SCH-14)
(2/3) : H. DEFLECTION BLOCK (➡SCH-15)
(3/3) : HIGH VOLTAGE BLOCK (➡SCH-16)
RELAY DRIVE ASSY (AWZ6094) (➡SCH-17)
POWER DOWN ASSY (AWZ6093) (➡SCH-17)
S. TERMINAL ASSY (AWZ6085) (➡SCH-3)
AV2 ASSY (AWZ6084) (➡SCH-3)
TUNER ASSY (AWZ6075) (➡SCH-2)
C CONNECTOR ASSY (AWZ6081) (➡SCH-2)
D CONNECTOR ASSY (AWZ6092) (➡SCH-9)
Y/C ASSY (AWZ6091) (➡SCH-9)
CONVERGENCE ASSY (AWV1520) (➡SCH-11)
B CONV DAC ASSY (AWZ6078 : SD-T50W1) (AWZ6154 : SD-T43W1) (➡SCH-12)
G CONV DAC ASSY (AWZ6077 : SD-T50W1) (AWZ6153 : SD-T43W1) (➡SCH-12)
R CONV DAC ASSY (AWZ6076 : SD-T50W1) (AWZ6152 : SD-T43W1) (➡SCH-12)
L1 : DY (R) ATL1112
L2 : DY (G) ATL1112
L3 : DY (B) ATL1112
S1 : VOLTAGE SELECTOR AKX7061
T1 ATS1555
S2 : POWER ASG1082
AC IN ASSY (AWZ6090) (➡SCH-17)
AC INLET AKP1021
AC POWER CORD ADG1107 OR ADG1109
AC 110V/120·127V/ 220·230V/240V 50/60Hz

5.2 TUNER AND C CONNECTOR ASSEMBLIES

TUNER ASSY (AWZ6075)

Note:For waveforms and voltages, refer to section 5.19.

SCH-2

➡ : Video signal route

⇨ : Audio signal route (L ch)

ANTENNA

ADE-082

TV FRONT END

M1501 AXF1085-

Q1501 : REGULATOR

Q1506, Q1507 : SIF AMP. for L'

Q1541 : TRAP SW.

Q1510, Q1511 : TRAP SW.

Q1540: SIF AMP.

Q1759 2SC2668

Q1535 : SIF AMP.

Q1512 – Q1515 : TRAP SW.

Q1502 – Q1504 : PIF AMP.

F1504 ATF1046-

F1506 ATF1180-

F1505 ATF1063

F1503 ATF1140

F1514 ATF1051

F1513 ATF1051

F1507 ATF1063

F1501 ATF1053-

F1508 ATF1051

F1502 ATF1052

IC1501 : IF SIGNAL PROCESSOR

Q1526 : VCO SW.

Q1545 : BUZZ DECREASE

Q1518, Q1519, Q1521, Q1522 : AUDIO TRAP SW.

IC1501 : VIDEO/ SIF/FM DETECT

IC1501 UPC1823ACU

Q1527 : AGC DRIVER

Q1532 : MUTE

Q1754 : REGULATOR

IC1752 AT24C01A10PC

IC1752 : E²PROM

Q1528, Q1529 : H SYNC DET.

Q1755 – Q1758 : MUTE

C CONNECTOR ASSY (AWZ6081)

AV I/O ASSY (1/2) A5 (➡SCH-3)

AV I/O ASSY (1/2) A6 (➡SCH-3)

Q1701 – Q1703 : SIF AMP.

IC1701 : AM DECODER

IC1651 CXA1734S US MPX DECODER

IC1701 LA7710

IC1751 : NICAM/CCIR DECODER

IC1751 UVS11MA24

Q1751 – Q1753 : 2nd SIF and for B/G/L

Q1781, Q1782 : 2nd SIF and for I

Q1783 : 2nd E2P RESET

TP1501 TP1503 TP1506 TP1505 ZX-009

TP1502 ZX-009

TP1509 ZX-009

TP1511 ZX-009

TP1508 ZX-009

TP1510 ZX-009

TP1513 ZX-009

TP1651 ZX-009

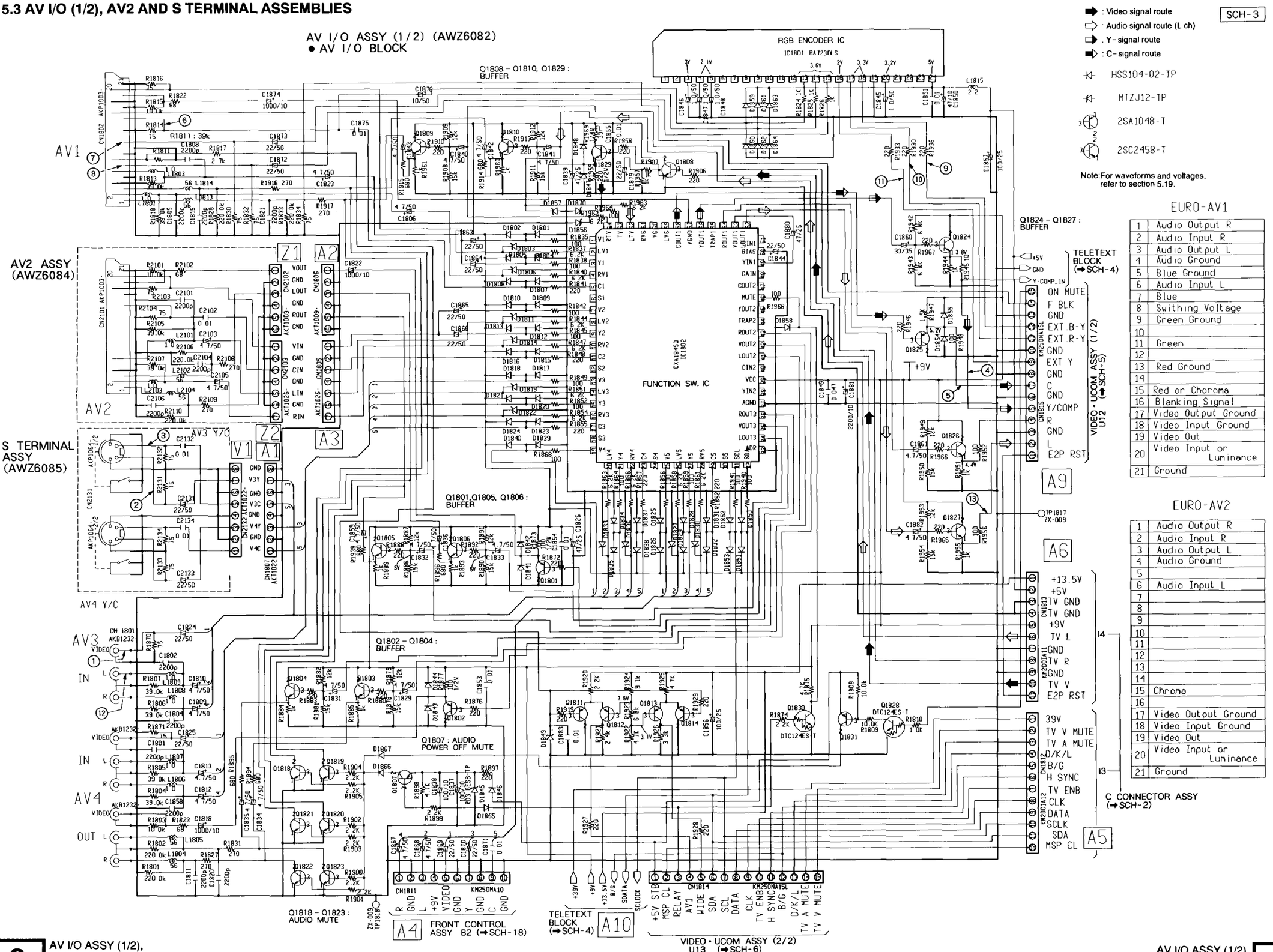
TP1653 TP1652 ZX-009

TP1752 TP1751 ZX-009

TP1753 ZX-009

TP1754 ZX-009

5.3 AV I/O (1/2), AV2 AND S TERMINAL ASSEMBLIES

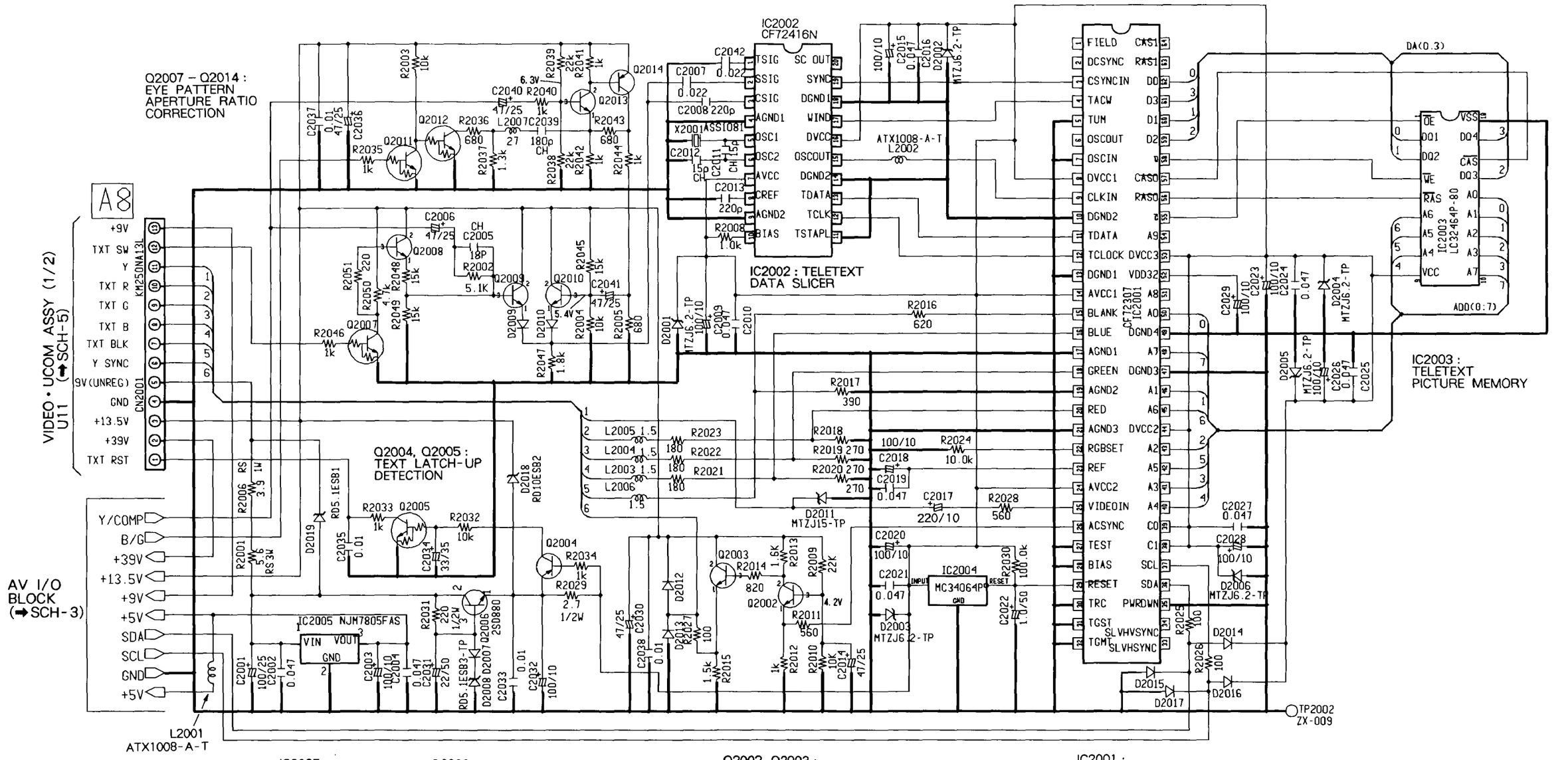


5.4 AV I/O ASSY (2/2)

AV I/O ASSY (2/2) (AWZ6082)
• TELETEXT BLOCK

Note:For waveforms and voltages, refer to section 5.19.

SCH-4



5.5 VIDEO•UCOM ASSY (1/2)

VIDEO・UCOM ASSY (1/2) (AWV1542)
● VIDEO BLOCK

SCH-5

⇨ : Audio signal route(L ch)
➡ : Y-signal route
➡ : C-signal route
(R) : R signal route
(G) : G signal route
(B) : B signal route

Note: For waveforms and voltages, refer to section 5.19.

U10 D CONNECTOR ASSY Q2 (➡SCH-9): CONT, ABL, CONT OUT, ACL, ACL SW
U9 D CONNECTOR ASSY Q1 (➡SCH-9): +12V, C IN, GND, C (3L), GND, C OUT, S/C, B/W SW, TRPO, Y OUT, TRPI, Y (3L), GND, Y/COMP IN, GND
U12 AV I/O ASSY (1/2) A9 (➡SCH-3): E2PRST, L, GND, R, Y/COMP, GND, C, GND, EXT Y, GND, EXT R-Y, EXT B-Y, GND, F.BLK, ON MUTE
U3 DIGITAL ASSY D1 (➡SCH-7, 8): +9V, S.CLK, GND, +5V, S.DATA, +5V, TRPO, H.BLK, CLK, H.BLK, GATE ENB, V.BLK, DATA, CLAMP PULS, RESET 2, GND, V BLK 2, B-Y, RESET 2, R-Y, EXP P1, GND, EXT S, CMPRSD R-Y, GND, CMPRSD B-Y, C(3LINE), GND, GND, CMPRSD Y, Y(3LINE), GND, GND, Y(V/S)OUT, Y(V/S)IN, GND, GND, C(V/S)OUT, C(V/S)IN, GND, GND, V BLK 1, Y/COMP, GND, GND, C.BLK, EXT P2, P.S.W, EXT M
U11 AV I/O ASSY (2/2) A8 (➡SCH-4): TXT RST, +33V, +13.5V, GND, 9V UNR, Y.SYNC, T.BLK, TEXT B, TEXT G, TEXT R, Y, TXT SW, +5V
UCOM BLOCK (➡SCH-6): SCL, SDA, TPPO, CLK, GND, V BLK, DATA2, RESET 2, V BLK 1, B OFF, G OFF, R OFF, D S, BLK, OSD B, OSD G, OSD R, BD/GD, COLOR, INT, BRITE, SHARPNESS, VNR, VC, SW, V MUTE, L, R, B/W SW, DEF, TEST CROSS, SW1, SW2, SW3, +13.5V, T MUTE, S/C, RGB SW, ON MUTE, TXT RST, CONTRA, ZAPPRST

Q1069, Q1097 – Q1099 : V.BLK EXPANSION
Black Level Cor IC1001 CX20125
CLAMP PULS
Q1060, Q1061 : Y CLAMP
IC1002 : OUTLINE CORRECTION
Q1076 – Q1078 : EXT R-Y 6dB AMP.
Q1056, Q1057 : R-Y CLAMP
SIDE PANEL SW
Q1002, Q1003, Q1051 : SIDE PANEL Y SHAPER
IC1003 : VIDEO CHROMA SYNC SIGNAL PROCESSOR
4:3NORMAL SW
Q1079 – Q1081 : EXT B-Y 6dB AMP.
Q1058, Q1059 : B-Y CLAMP
DELAY SELECTOR
Colour Transient Improvement IC1004 LA4566
Q1088 : H.BLK INV.
Q1004 : V.BLK & INV.
B-Y Del.
PAL Adj.
BELL Filter
F.BLK INV.
EXT/INT SW
Q1063 : Y MIXER
Q1016, Q1018 : 50/60 DET.
IC1008 : + 9V REGULATOR
IC1009 : + 5V REGULATOR
Q1070 : OFF MUTE
Q1074, Q1075, Q1095 : DIGITAL EXT R-Y 6dB AMP.
Q1072, Q1073, Q1094 : DIGITAL B-Y 6dB AMP.
Q1085 : CLAMP PULSE INV.
Q1092, Q1093, Q1096 : RGB MODE DISCRIMINATION
DTC124ES-T
2SA1048-T
2SC2458-T
HSS104-02-TP

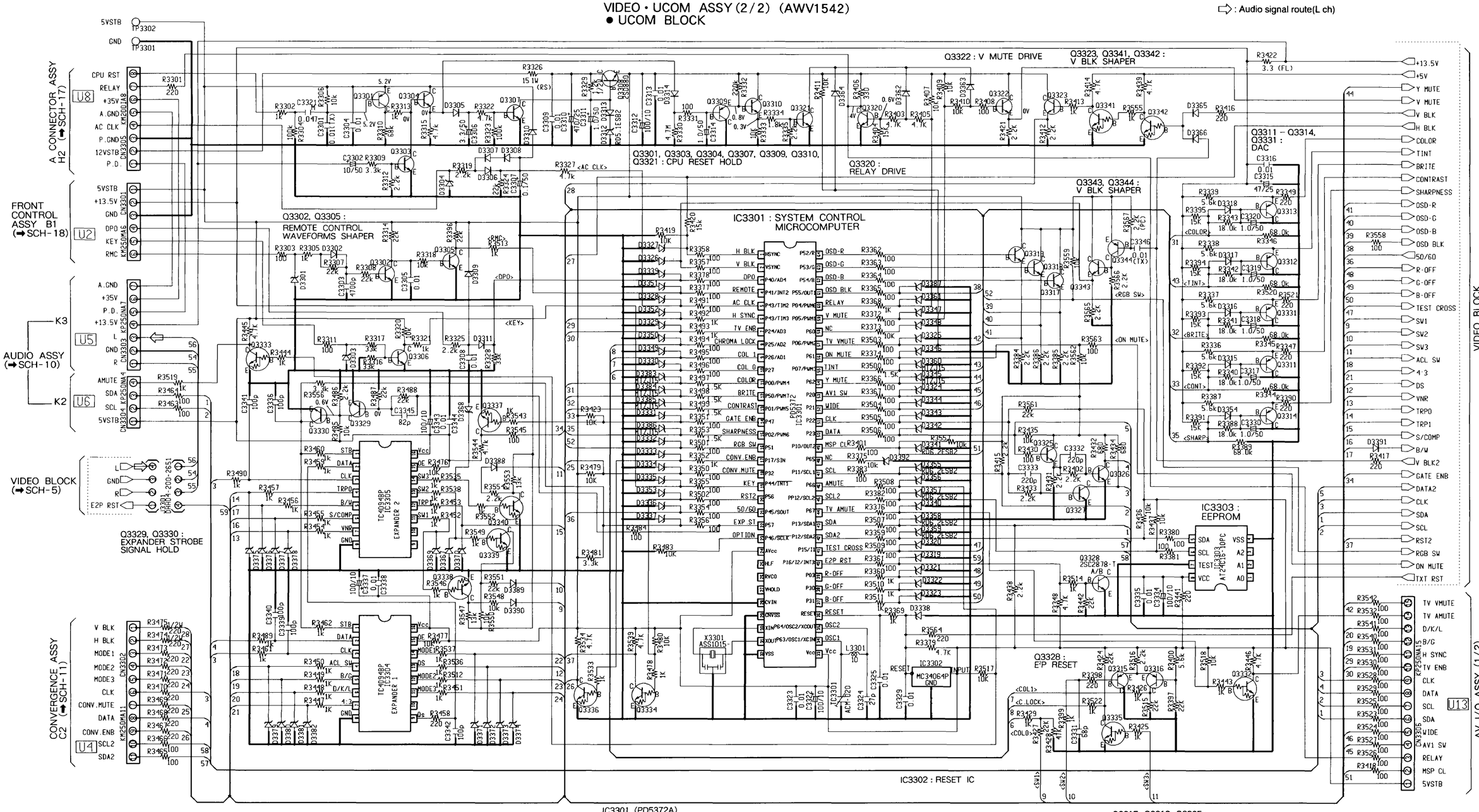
R Drive Adj.
-R PREDRIVE-
G Drive Adj.
-G PREDRIVE-
B Drive Adj.
-B PREDRIVE-
LINEAR WHITE
9V REG.
OSD R
OSD G
OSD B
G CRT DRIVE ASSY N1 (➡SCH-13)
R CRT DRIVE ASSY M1 (➡SCH-13)
B CRT DRIVE ASSY P1 (➡SCH-13)
A CONNECTOR ASSY H1 (➡SCH-17)

5.6 VIDEO•UCOM ASSY (2/2)

SCH-6

VIDEO • UCOM ASSY (2/2) (AWV1542)
● UCOM BLOCK

⇨ : Audio signal route(L ch)


A CONNECTOR ASSY H2 (➡SCH-17)
FRONT CONTROL ASSY B1 (➡SCH-18)
AUDIO ASSY (➡SCH-10)
VIDEO BLOCK (➡SCH-5)
CONVERGENCE ASSY C2 (➡SCH-11)
IC3301 : SYSTEM CONTROL MICROCOMPUTER
Q3322 : V MUTE DRIVE
Q3323, Q3341, Q3342 : V BLK SHAPER
Q3301, Q3303, Q3304, Q3307, Q3309, Q3310, Q3321 : CPU RESET HOLD
Q3320 : RELAY DRIVE
Q3343, Q3344 : V BLK SHAPER
Q3311 – Q3314, Q3331 : DAC
Q3302, Q3305 : REMOTE CONTROL WAVEFORMS SHAPER
Q3329, Q3330 : EXPANDER STROBE SIGNAL HOLD
IC3303 : EEPROM
Q3328 : E²P RESET
IC3302 : RESET IC
Q3315, Q3316, Q3335 : COLOR SYSTEM DISCRIMINATION
AV I/O ASSY (1/2) A10 (➡SCH-3)
VIDEO BLOCK (➡SCH-5)

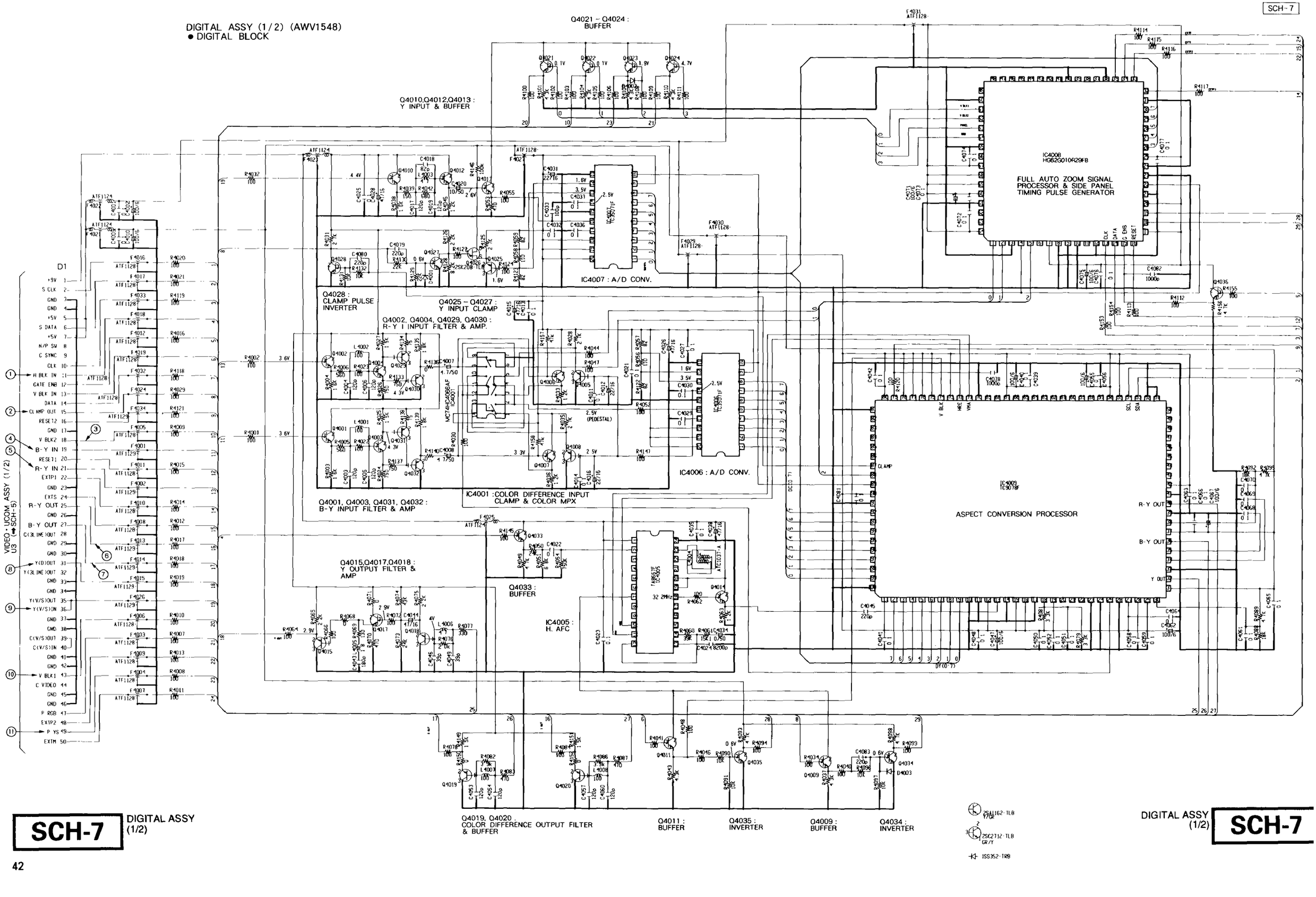
IC3301 (PD5372A)

Pin No.	Voltage (V)	Pin No.	Voltage (V)	Pin No.	Voltage (V)	Pin No.	Voltage (V)	Pin No.	Voltage (V)	Pin No.	Voltage (V)	Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	A	9	0	17	A	25	NC	33	5.2	41	0	49	5.2	57	0
2	A	10	0	18	5	26	NC	34	5.2	42	A	50	5.2	58	NC
3	2.9	11	A	19	5	27	NC	35	5.2	43	A	51	5.2	59	0
4	5.2	12	A	20	0	28	0	36	5.2	44	0	52	0	60	0
5	A	13	A	21	0	29	0	37	0	45	A	53	0	61	0
6	A	14	A	22	A	30	2.3	38	0	46	3.8	54	0	62	0
7	0	15	A	23	—	31	2.5	39	0	47	A	55	A	63	0
8	5.2	16	0	24	5.2	32	0	40	0	48	NC	56	0	64	0

2SA1048 2SC2458 DTC124ES XDC124ES HSS104-02-TP RD6.8ESB-TP MTZJ6.8-TP

A : ⎍⎍

5.7 DIGITAL ASSY (1/2)



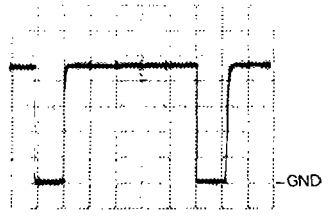
SCH-7 DIGITAL ASSY (1/2)

DIGITAL ASSY (1/2) SCH-7

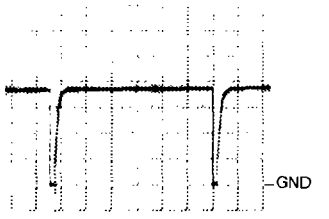
• Waveformes of DIGITAL ASSY

• Input signal : Color bar
• Picture quality : Standard
• Range : DC range (Unless otherwise noted)

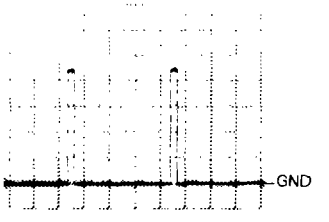
① **D1 - pin 11 (H. BLK IN)**
V : 2V/div. H : 10 μsec/div.
• 4 : 3 color-bar input



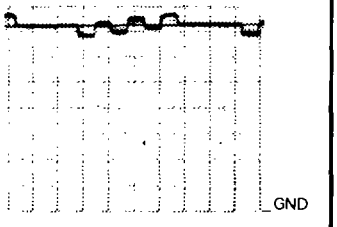
② **D1 - pin 15 (CLAMP OUT)**
V : 1V/div. H : 10 μsec/div.
• 4 : 3 color-bar input



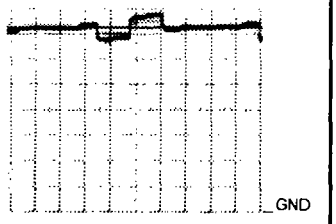
③ **D1 - pin 18 (V. BLK 2)**
V : 1V/div. H : 5msec/div.
• 4 : 3 color-bar input



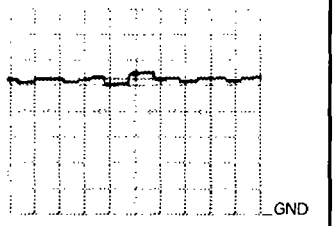
④ **D1 - pin 19 (B Y IN)**
V : 0.5V/div. H : 10 μsec/div.



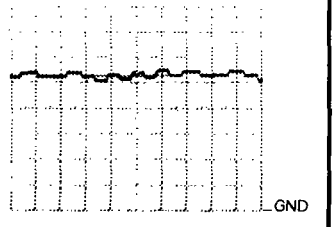
⑤ **D1 - pin 21 (R - Y IN)**
V : 0.5V/div. H : 10 μsec/div.



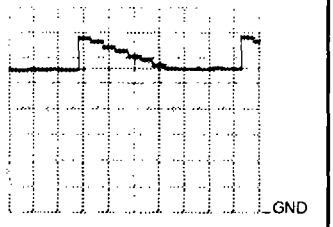
⑥ **D1 - pin 25 (R - Y OUT)**
V : 1V/div. H : 10 μsec/div.



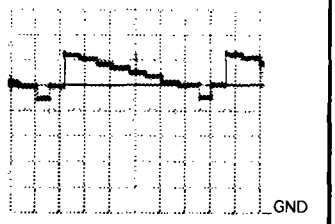
⑦ **D1 - pin 27 (B - Y OUT)**
V : 1V/div. H : 10 μsec/div.



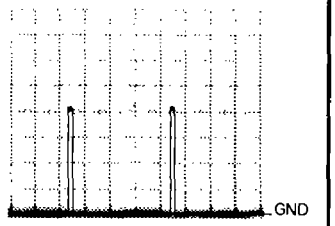
⑧ **D1 - pin 31 (Y (D) OUT)**
V : 0.5V/div. H : 10 μsec/div.



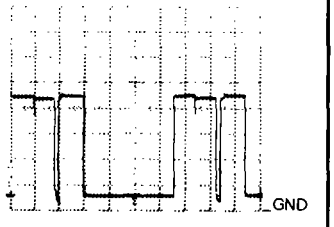
⑨ **D1 - pin 36 (Y (V/S) IN)**
V : 1V/div. H : 10 μsec/div.



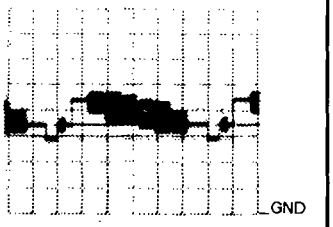
⑩ **D1 - pin 43 (V. BLK 1)**
V : 1V/div. H : 5msec/div.



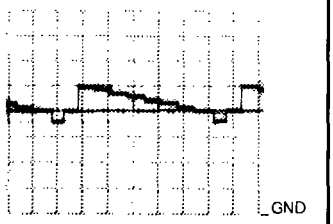
⑪ **D1 - pin 49 (P YS)**
V : 1V/div. H : 10 μsec/div.



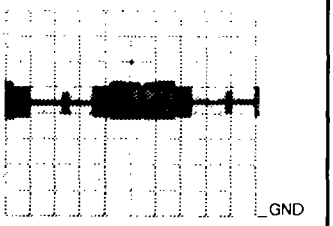
⑫ **D1 - pin 28 (C OUT)**
V : 1V/div. H : 10 μsec/div.



⑬ **D1 - pin 32 (Y OUT)**
V : 1V/div. H : 10 μsec/div.



⑭ **D1 - pin 44 (C. VIDEO)**
V : 0.1V/div. H : 10 μsec/div.



5.8 DIGITAL ASSY (2/2)

DIGITAL ASSY (2/2) (AWV1548)
● 3 LINE BLOCK

SCH-8

IC4301 (CXA1686M)

Pin No.	Voltage (V)	Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	2.2	11	4.5	21	0.8
2	1.9	12	0	22	NC
3	2.5	13	3.2	23	5.0
4	0	14	2.5	24	NC
5	1.2	15	2.6	25	5.0
6	0	16	NC	26	2.2
7	0	17	2.9	27	5.0
8	1.9	18	5.0	28	0
9	0.1	19	3.9	29	5.0
10	0	20	3.9	30	2.2

IC4302
CXD2024AQ
3 LINE Y/C SEP.

Q4310 – Q4314 :
COMPOSITE SIGNAL INPUT
FILTER & AMP

C OUTPUT FILTER & AMP

Y OUTPUT FILTER & AMP

IC4301 :
BURST LOCK PLL
CXA1686M IC4301

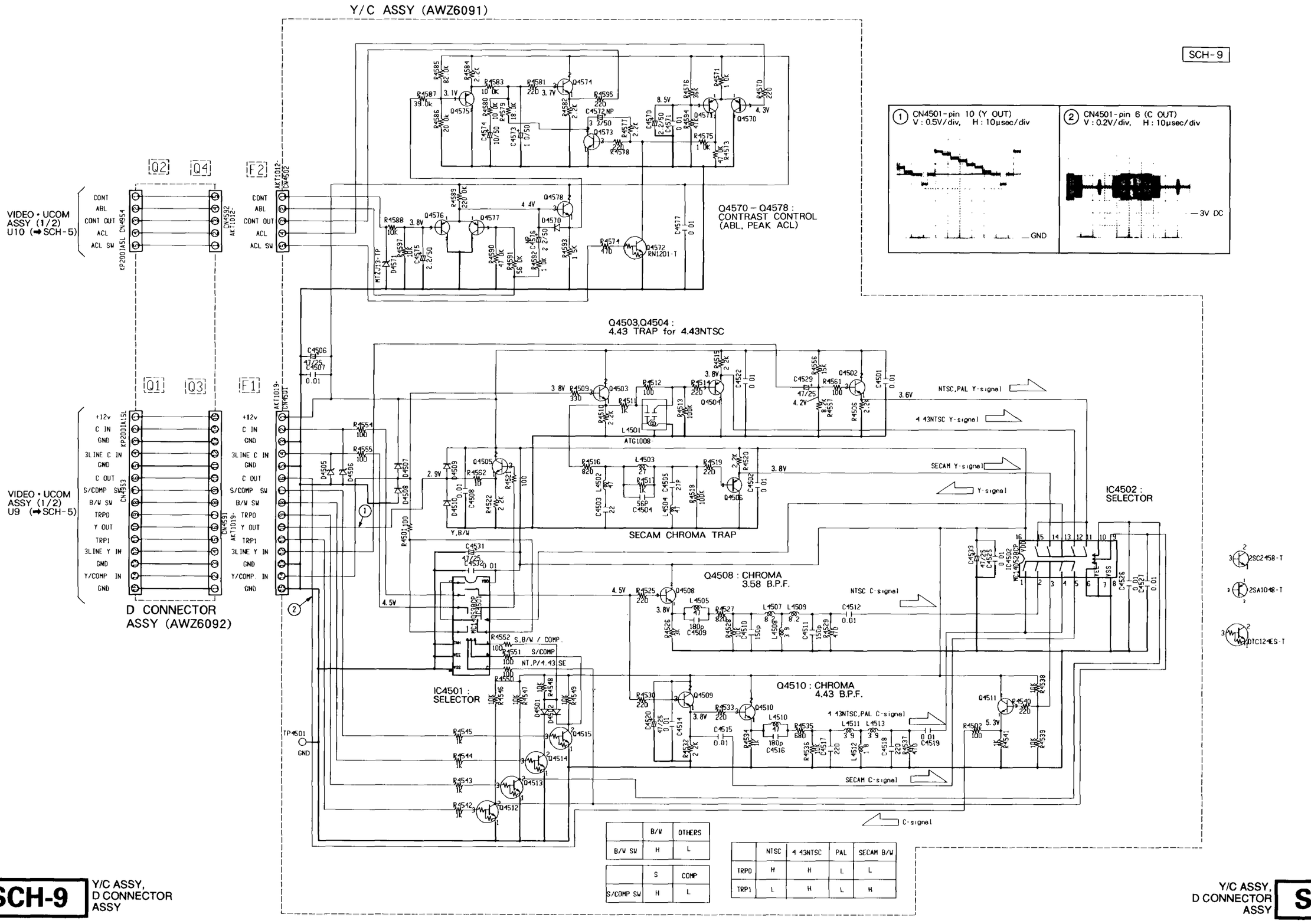
2SC2712-TLB

2SA1162-TLB

D1
1 +9V
2 S.CLK
3 GND
4 GND
5 +5V
6 S DATA
7 +5V
8 N/P SW
9 C SYNC
10 CLK
11 H.BLK IN
12 ENB
13 V.BLK IN
14 DATA
15 CLAMP OUT
16 RESET2
17 GND
18 V BLK2
19 Q IN
20 RESET1
21 I IN
22 EXTP1
23 GND
24 EXTS
25 I OUT
26 GND
27 Q OUT
28 C(3LINE)OUT
29 GND
30 GND
31 Y(D)OUT
32 Y(3LINE)OUT
33 GND
34 GND
35 Y(V/S)OUT
36 Y(V/S)IN
37 GND
38 GND
39 C(V/S)OUT
40 C(V/S)IN
41 GND
42 GND
43 V BLK1
44 C VIDEO
45 GND
46 GND
47 P RGB
48 EXTP2
49 P YS
50 EXTM

VIDEO・UCOM ASSY (1/2)
U3 (➡SCH-5)

5.9 Y/C AND D CONNECTOR ASSEMBLIES



	B/W	OTHERS
B/W SW	H	L

	S	COMP
S/COMP SW	H	L

	NTSC	4.43NTSC	PAL	SECAM B/W
TRP0	H	H	L	L
TRP1	L	H	L	H

SCH-10

AUDIO ASSY (AWZ6086)

: Audio signal route (L ch)

VIDEO・UCOM ASSY (2/2) U5 (➡SCH-6)

VIDEO・UCOM ASSY (2/2) U6 (➡SCH-6)

IC3701 : SURROUND PROCESSOR

IC3701 : POWER AMP.

IC3702 LA4280-P

NJM4558DXP

VARIABLE AUDIO OUTPUT

INT. SPEAKERS

EXT SP

HEAT SINK

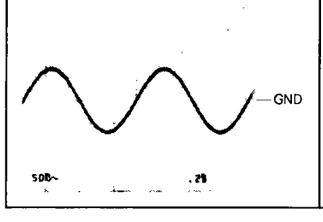
2SC2458-T

2SA1048-T

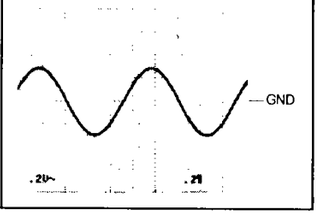
HSS104-02-TP

Input signal : 500mV rms 1kHz sin-wave, AC3 input
Picture quality : Standard
Range : AC range

① K3-pin 7 (R IN)
V : 500mV/div, H : 200μsec/div



② EXT. SP R ch
V : 2V/div, H : 200μsec/div
Connect with 8Ω dummy load



IC3701 (UPC1853CT-01)

Pin No.	Voltage (V)	Pin No.	Voltage (V)	Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	0	9	6	17	6	25	6
2	6	10	6	18	4.5	26	6
3	6	11	6	19	4.5	27	6
4	6	12	6	20	5	28	6
5	6	13	6	21	5	29	6
6	6	14	6	22	0	30	6
7	6	15	11.9	23	0		
8	6	16	6	24	6		

IC3702 (LA4280-P)

Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	0.8	8	0.8
2	1.2	9	0
3	0.7	10	0
4	19	11	19.6
5	0	12	38.6
6	0.7	13	18.9
7	1.1	14	0

SCH – 11

CONVERGENCE ASSY (AWV1520)

DYNAMIC FORCUS

4TH DISTORTION V

4TH DISTORTION H

Note:For waveforms and voltages, refer to section 5.19.

(V)△: V. Deflection signal route

Notes
1 RESISTERS
(RS):METAL OXIDE FILM RESISTER
(RT):CEMENT RESISTER
(RN):METAL FILM RESISTER
(FL) NON FLAMMABLE RESISTER
THE OTHERS CARBONFILM RESISTER
Figures in phorentheses show the rated wattage.
Those unspecified ones are of 1/4W.
K:K ,M:M ,Unspecified ones are of

2. CAPACITORS
(HA) Aluminium electrolytic capasitors (105)
p.pF,Unspecified ones are of F
Capacity/Voltage
Unspecified ones are of 50V

2SC2458-T (GR/Y)	OR	2SC2170S-T(S/R)
2SA1048-T (GR/Y)	OR	2SA933S-T (S/R)
HSS104-02-TP	OR	1SS252-TP
RD12ESB-TP	OR	MTZJ12-TP

POWER SUPPLY ASSY (1/3) E10 (➡SCH-14)

IC603 : H. CONVERGENCE CORRECTION WAVEFORM GENERATOR

IC604 : V. CONVERGENCE CORRECTION WAVEFORM GENERATOR

IC601 : −5V REGULATOR

IC602 : +5V REGULATOR

IC605 : CONVERGENCE YOKE DRIVE

IC606 : V. DRIVE

G CONV. DAC ASSY S2 (➡SCH-12)

B CONV. DAC ASSY T2 (➡SCH-12)

R CONV. DAC ASSY R2 (➡SCH-12)

R CONV. DAC ASSY R1 (➡SCH-12)

G CONV. DAC ASSY S1 (➡SCH-12)

B CONV. DAC ASSY T1 (➡SCH-12)

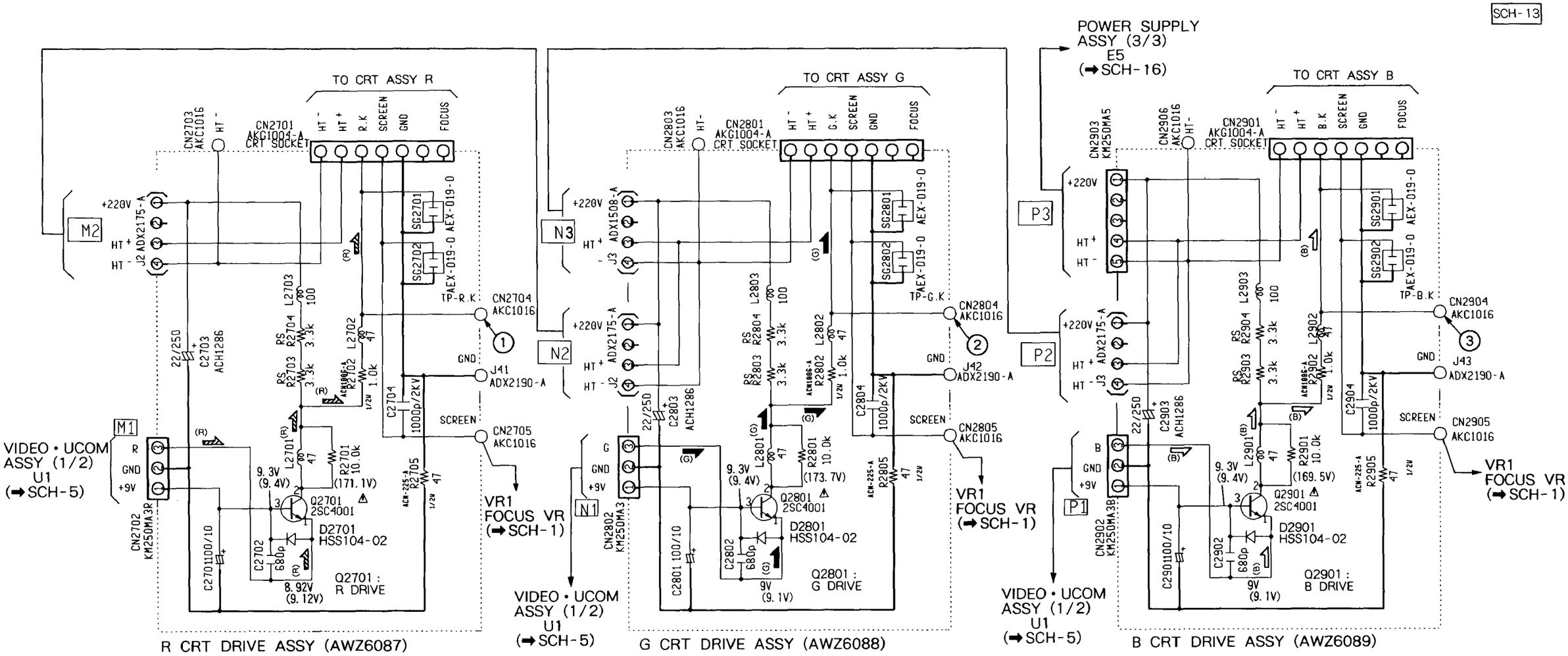
VIDEO・UCOM ASSY (2/2) U4 (➡SCH-6)

TO DY CONVERGENCE

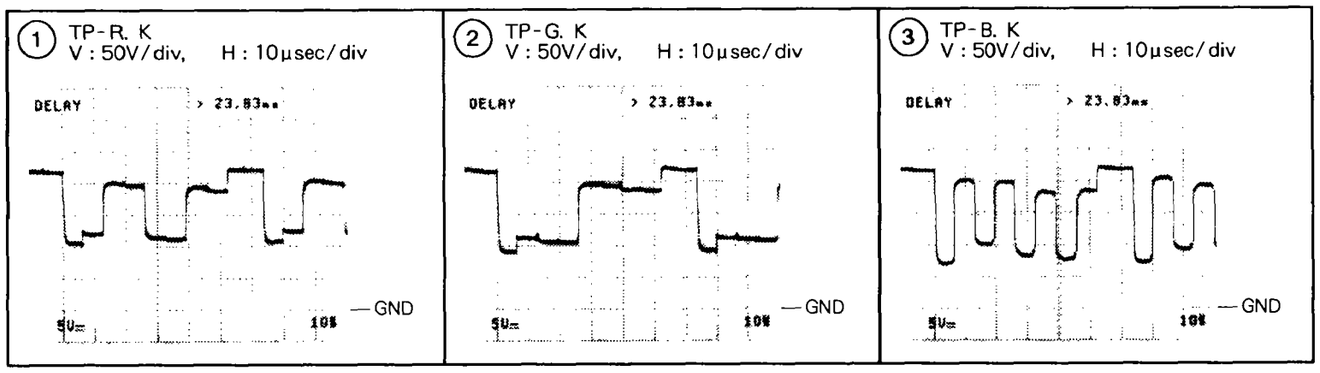
MODE	1	2	3
NORMAL (N) FULL (F)	H	H	H
ZOOM (Z)	H	L	H
CINEMA (C)	L	H	H
Natural (Na)	L	L	L

POWER DOWN

SCH-13


TO CRT ASSY R
TO CRT ASSY G
TO CRT ASSY B
POWER SUPPLY ASSY (3/3) E5 (➡SCH-16)
CN2703 AKC1016
CN2701 AKG1004-A CRT SOCKET
CN2803 AKC1016
CN2801 AKG1004-A CRT SOCKET
CN2903 KM250MA5
CN2906 AKC1016
CN2901 AKG1004-A CRT SOCKET
HT - HT + R.K G.K B.K SCREEN GND FOCUS
M2 M1 N3 N2 N1 P3 P2 P1
+220V HT + HT - G GND +9V B
J2 ADX2175-A J3 ADX1508-A J2 ADX2175-A J3 ADX2175-A
SG2701 SG2702 SG2801 SG2802 SG2901 SG2902 AEX-019-0
TP-R.K TP-G.K TP-B.K
CN2704 CN2804 CN2904 AKC1016
GND J41 J42 J43 ADX2190-A
SCREEN CN2705 CN2805 CN2905 AKC1016
VR1 FOCUS VR (➡SCH-1)
VIDEO • UCOM ASSY (1/2) U1 (➡SCH-5)
CN2702 CN2802 CN2902 KM250MA3B
D2701 D2801 D2901 HSS104-02
Q2701 2SC4001 Q2801 2SC4001 Q2901 2SC4001
9.3V (9.4V) (171.1V) (173.7V) (169.5V)
8.92V (9.12V) 9V (9.1V)
Q2701 : R DRIVE Q2801 : G DRIVE Q2901 : B DRIVE
R CRT DRIVE ASSY (AWZ6087)
G CRT DRIVE ASSY (AWZ6088)
B CRT DRIVE ASSY (AWZ6089)

Input signal : PAL color-bar signal



(R) : R. signal route
(G) : G. signal route
(B) : B. signal route

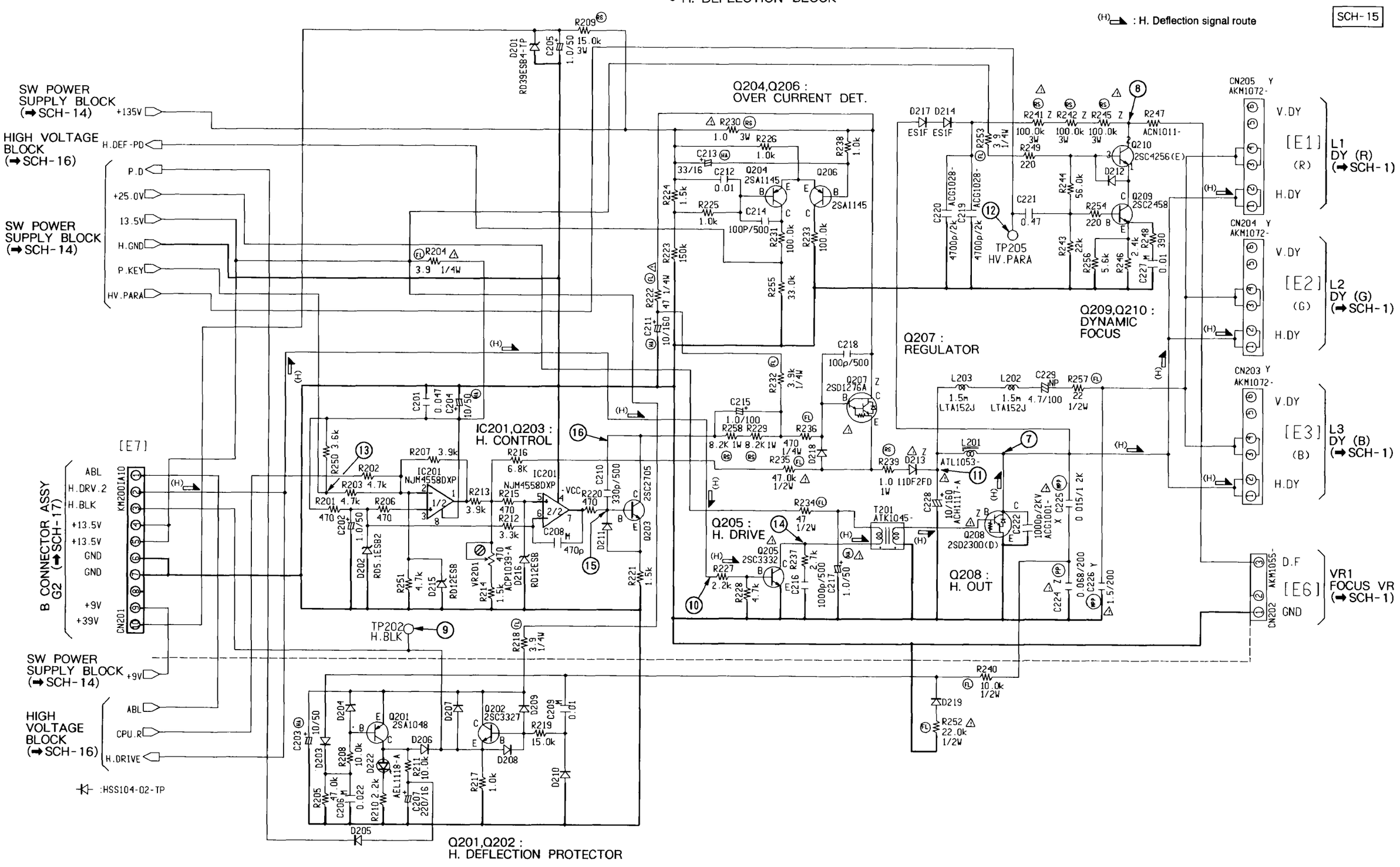
(V) : DC + AC range

5.15 POWER SUPPLY ASSY (2/3)

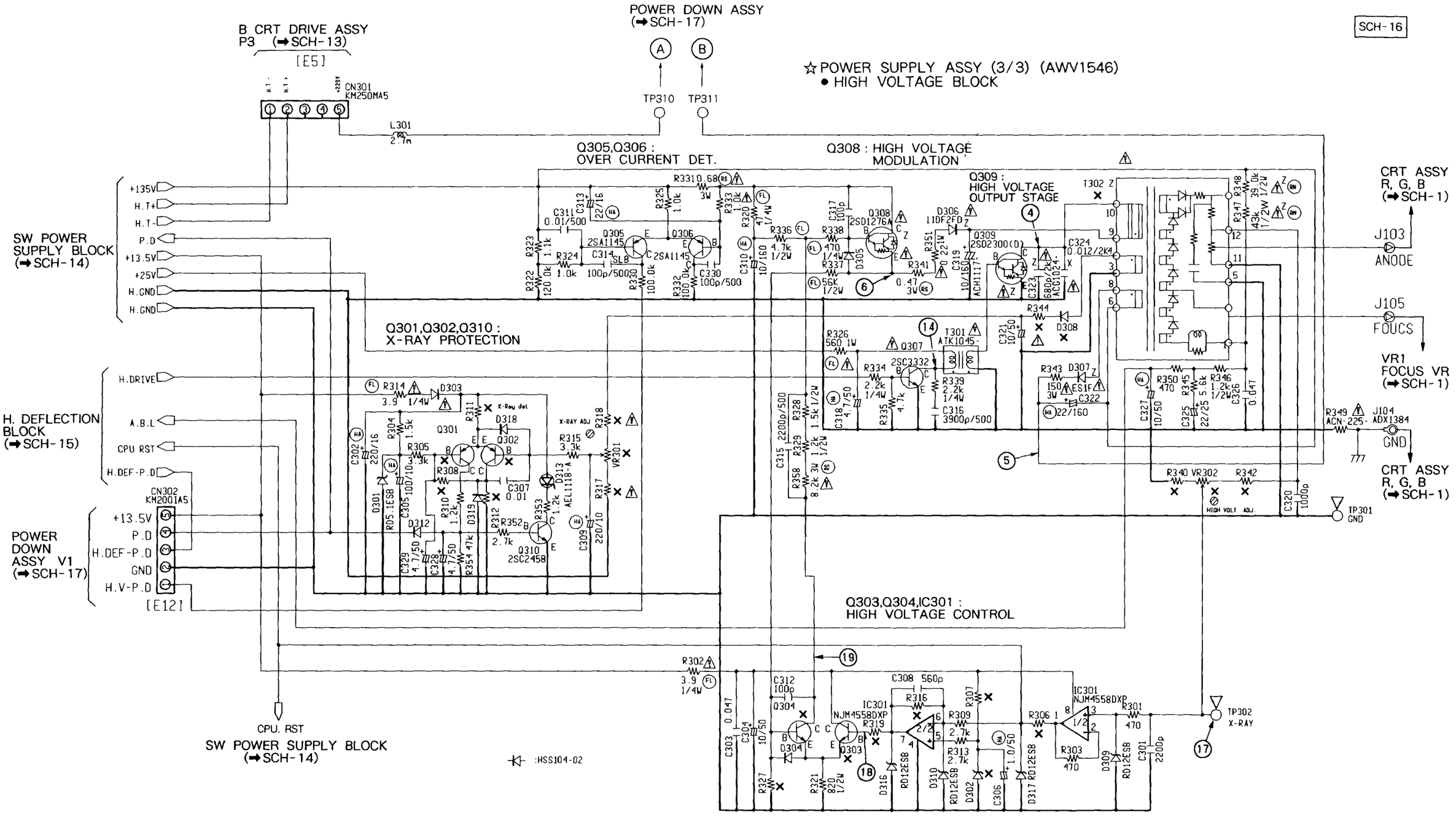
☆ POWER SUPPLY ASSY (2/3) (AWV1546)
● H. DEFLECTION BLOCK

(H) : H. Deflection signal route

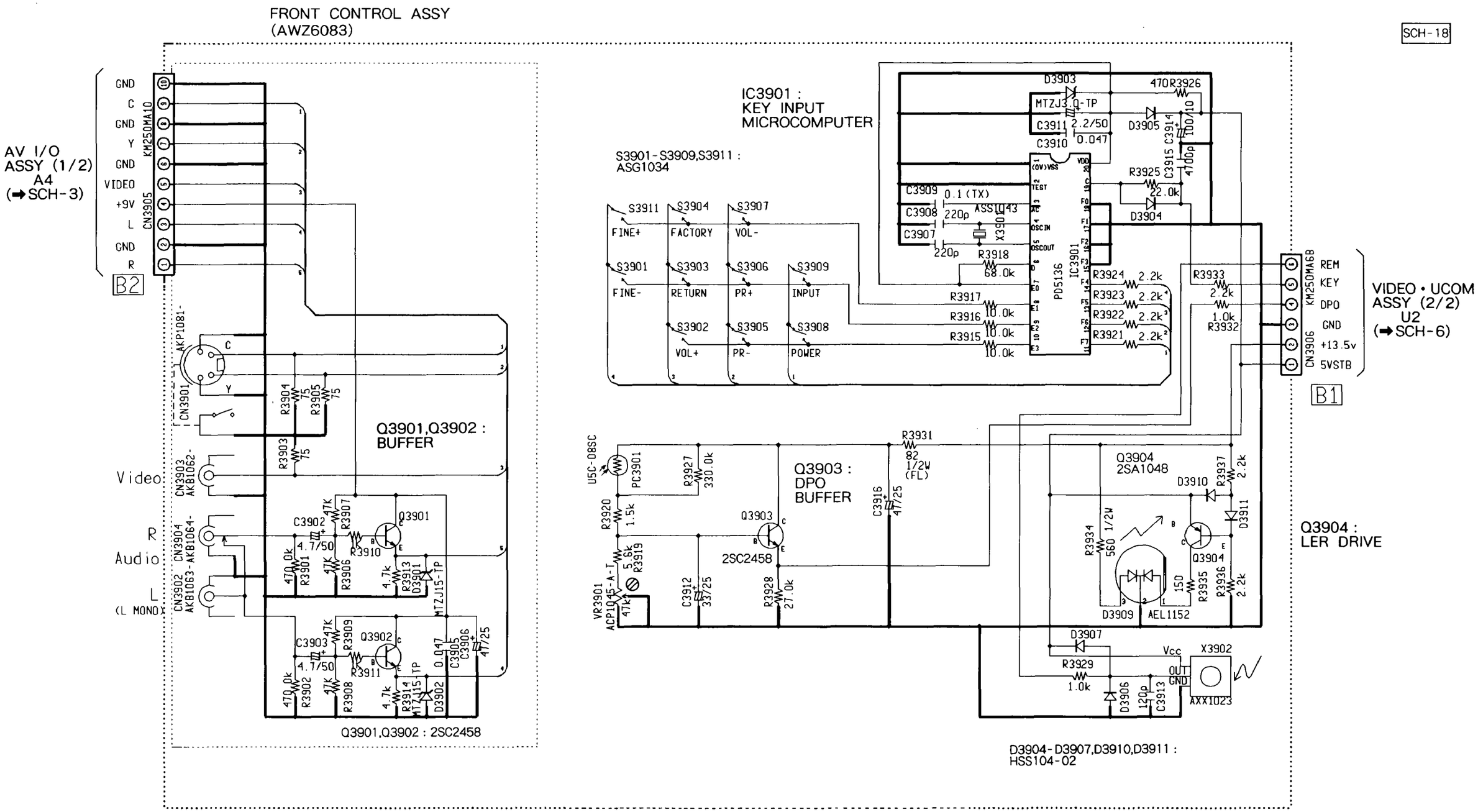
SCH-15



5.16 POWER SUPPLY ASSY (3/3)



5.18 FRONT CONTROL ASSY

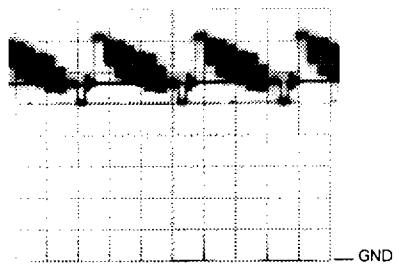


5.19 WAVEFORMS AND VOLTAGES

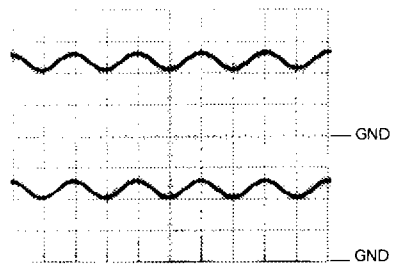
SCH-2 TUNER ASSY

Input Signal : Color-bar , AV3 input
Picture quality : Standard
Range : DC range (Unless otherwise noted)

① **TP1513 (TV V OUT) PAL B/G**
V : 1V/div, H : 20 µsec/div



② **TP756 (TV L OUT) B/G**
V : 2V/div, H : 5msec/div
Upper ; L ch, Lower ; R ch



Measuring Point \ System	Voltage (V)				
	M	B/G	I	D/K/L	L'
D1513 Anode	6.1	0.1	4.0	4.2	4.0
D1514 Anode	0	3.3	0	0	0
D1508 Anode	0	0.1	0	4.2	0
D1509 Anode	0	3.3	0	0	0
D1510 Anode	6.1	0.1	4.0	4.2	4.0
D1511 Anode	0	3.3	0	0	0
D1511 Cathode	8.4	2.6	3.3	3.6	3.3
D1533 Anode	5.0	3.6	0.1	3.9	0.2
D1533 Cathode	4.3	3.0	2.9	3.3	2.9
D1512 Anode	2.8	0.2	1.6	1.6	0.2
D1512 Cathode	2.1	8.3	8.3	8.3	8.3

IC1501 (UPC1823ACU)

Pin No.	Voltage (V)	Pin No.	Voltage (V)	Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	0	12	5.9	23	0.2 to 5.1	34	7.6
2	4.6	13	5.9	24	0	35	7.6
3	8.9	14	8.9	25	5.4	36	0
4	8.9	15	8.0	26	8.6	37	4.9
5	L' : 2.9 other : 0.8	16	M : 0 other : 2.6	27	6.7	38	4.8
6	0	17	L' : 0 other : 2.2	28	3.4	39	4.8
7	L' : 0.8 other : 2.9	18	8.9	29	3.4	40	4.1
8	8.9	19	1.1	30	4.3	41	5.2
9	2.0	20	7.6	31	3.5	42	2.9
10	2.0	21	0	32	4.5		
11	0	22	0.2 to 5.1	33	8.9		

IC1651 (CXA1734S)

Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	—	16	4.0
2	—	17	0
3	0	18	4.0
4	0	19	4.0
5	1.3	20	4.0
6	1.3	21	4.0
7	4.0	22	1.7
8	4.2	23	4.0
9	3.4	24	4.1
10	5.3	25	3.9
11	3.9	26	1.7
12	3.2	27	1.3
13	4.1	28	4.1
14	4.0	29	4.1
15	9.1	30	NC

IC1701 (LA7710)

Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	4.4	9	9.0
2	4.4	10	2.8
3	6.3	11	6.2
4	NC	12	12.1
5	6.4	13	2.9
6	0	14	5.8
7	6.4	15	4.4
8	8.9	16	4.4

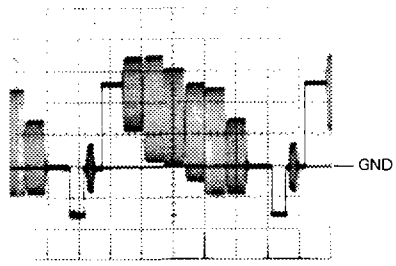
IC1751 (UVS1101A24)

Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	3.8	13	4.8
2	3.8	14	—
3	0	15	—
4	3.8	16	0
5	3.8	17	0
6	0	18	6.0
7	3.8	19	6.0
8	0	20	0
9	4.6	21	3.7
10	4.6	22	3.7
11	4.8	23	7.9
12	4.8	24	12.1

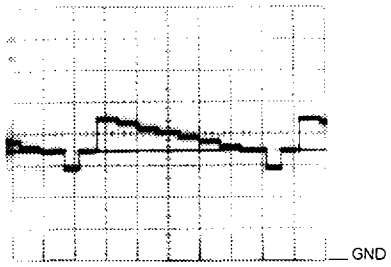
SCH-3 AV I/O (1/2), AV2 AND S TERMINAL ASSEMBLIES

Input Signal : Color-bar , AV3 input
Picture quality : Standard
Range : DC range (Unless otherwise noted)

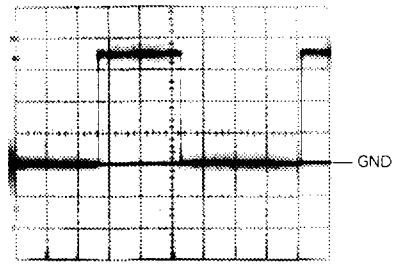
(1) CN1801 V IN terminal (VIDEO IN)
V : 0.2V/div, H : 10μsec/div



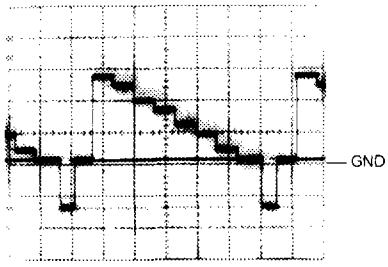
(4) -2 CN1815 - pin 5 (Y OUT)
V : 1V/div, H : 10 μsec/div



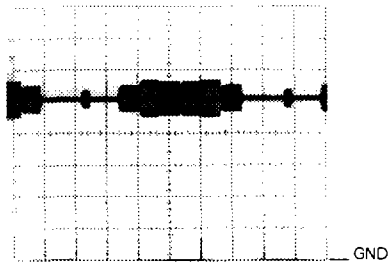
(8) CN1802 - pin 7 (B IN)
V : 0.2V/div, H : 10 μsec/div



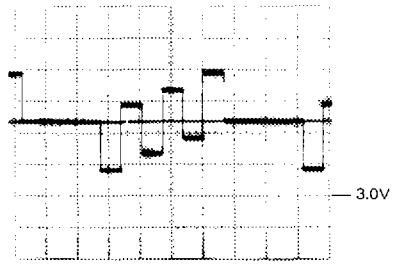
(2) CN2131 (Y IN)
V : 0.2V/div, H : 10 μsec/div



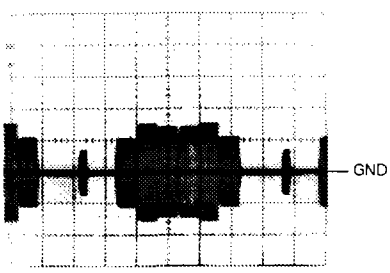
(5) CN1815 - pin 7 (C OUT)
V : 1V/div, H : 10 μsec/div



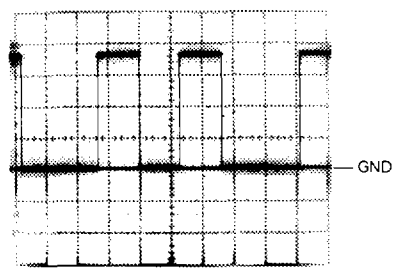
(9) CN1815 - pin 12 (EXT B - Y)
V : 0.2V/div, H : 10 μsec/div



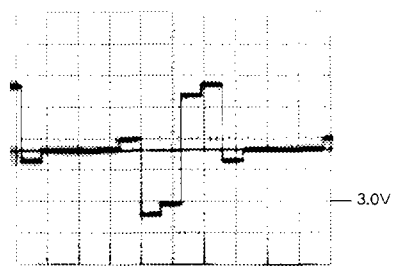
(3) CN2131 (C IN)
V : 0.2V/div, H : 10 μsec/div



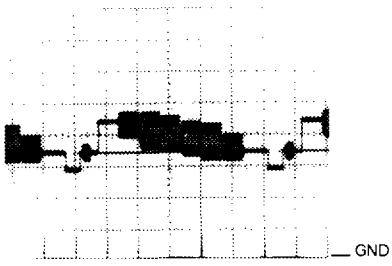
(6) CN1802 - pin 15 (R IN)
V : 0.2V/div, H : 10 μsec/div



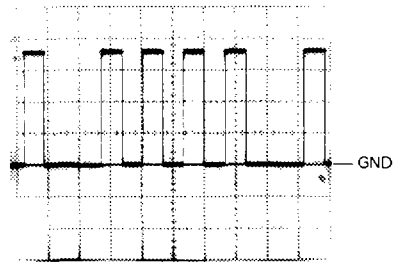
(10) CN1815 - pin 11 (EXT R - Y)
V : 0.2V/div, H : 10 μsec/div



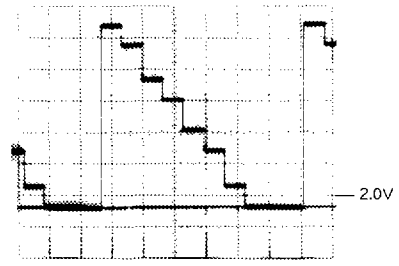
(4) -1 CN1815 - pin 5 (V OUT)
V : 1V/div, H : 10 μsec/div



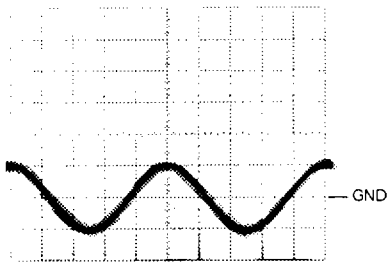
(7) CN1802 - pin 11 (G IN)
V : 0.2V/div, H : 10 μsec/div



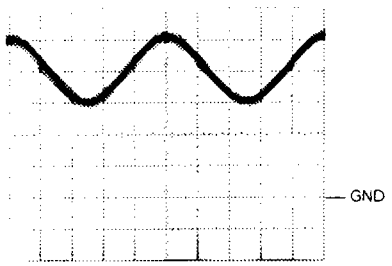
(11) CN1815 - pin 9 (EXT Y)
V : 0.2V/div, H : 10 μsec/div



(12) **CN1801 L IN terminal**
V : 1V/div, H : 20 μ sec/div



(13) **CN1815 - pin 2 (L OUT)**
V : 1V/div, H : 20 μ sec/div



IC1802 (CXA1845Q)

Pin No.	Voltage (V)	Pin No.	Voltage (V)	Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	4.5	17	4.5	33	0	49	4.5
2	4.6	18	NC	34	4.6	50	4.6
3	4.5	19	4.5	35	4.5	51	NC
4	4.6	20	4.6	36	4.6	52	4.6
5	4.5	21	4.5	37	0	53	4.5
6	NC	22	4.6	38	NC	54	4.6
7	4.5	23	4.5	39	9.0	55	NC
8	4.6	24	NC	40	NC	56	4.5
9	4.5	25	4.5	41	4.6	57	0
10	4.6	26	4.6	42	4.5	58	4.5
11	4.5	27	4.5	43	4.6	59	0
12	NC	28	4.6	44	NC	60	0
13	4.5	29	4.5	45	NC	61	0
14	4.6	30	NC	46	0	62	4.6
15	4.5	31	0/5	47	NC	63	4.5
16	4.6	32	0/5	48	NC	64	4.6

SCH-4 AV I/O ASSY (2/2)

IC2001 (CF72307)

Pin No.	Voltage (V)	Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	NC	23	1.4	45	3.5
2	NC	24	5	46	0
3	0	25	3.5	47	0
4	0	26	3.5	48	3.5
5	0	27	0	49	0
6	NC	28	0	50	0
7	0	29	5	51	NC
8	5	30	0	52	3.5
9	2.2	31	0	53	5
10	0	32	0	54	0
11	5	33	NC	55	3.5
12	0	34	NC	56	3.4
13	0	35	0	57	3.5
14	5	36	5	58	3.5
15	—	37	5	59	0
16	—	38	5	60	0
17	0	39	5	61	0
18	—	40	0	62	0
19	0	41	0	63	NC
20	—	42	0	64	NC
21	0	43	0		
22	1.4	44	5		

IC2002 (CF72416N)

Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	2.2	11	0
2	2.2	12	0
3	1.1	13	0
4	0	14	0
5	2.4	15	2.2
6	2.5	16	5.0
7	5.0	17	0
8	1.6	18	0
9	0	19	0
10	1.7	20	NC

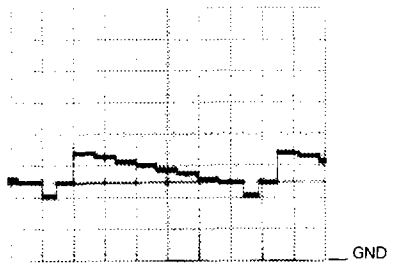
IC2003 (LC32464P-80)

Pin No.	Voltage (V)
1	3.5
2	0
3	0
4	3.5
5	3.4
6	3.5
7	0
8	0
9	5.0
10	3.5
11	0
12	0
13	0
14	0
15	0
16	3.5
17	0
18	0

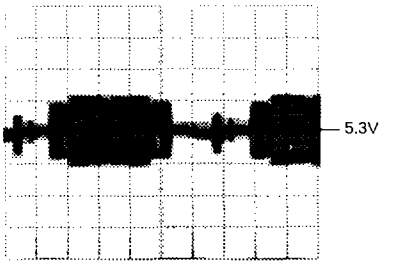
SCH-5 VIDEO • UCOM ASSY (1/2)

Input Signal : PAL EBU Color-bar , AV3 input
Picture quality : Standard
Range : DC range (Unless otherwise noted)

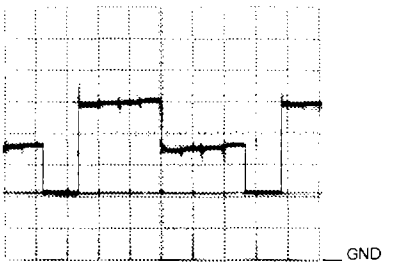
1 **CN1009 - pin 10 (Y)**
V : 1V/div, H : 10µsec/div



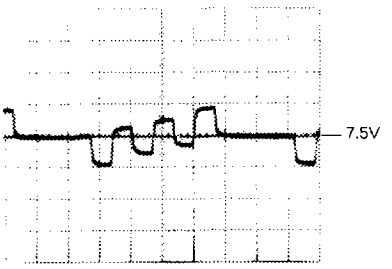
5 **TP1007 (C)**
V : 0.2V/div, H : 10µsec/div



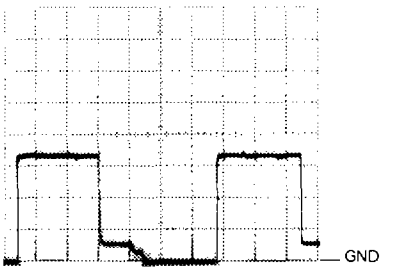
9 **Q1023 emitter (G OUT)**
V : 1V/div, H : 10µsec/div



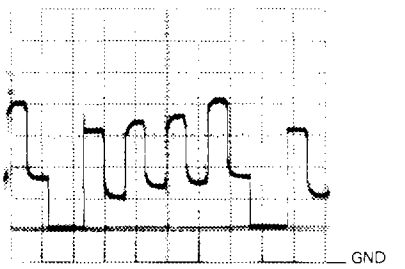
2 **Q1053 emitter (B - Y)**
V : 0.5V/div, H : 10µsec/div



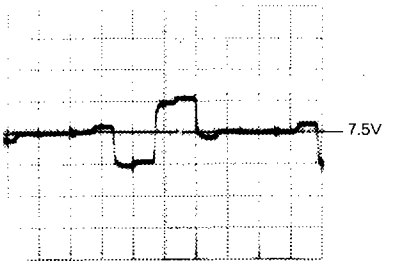
6 **CN1007 - pin 9 (H. DRIVE)**
V : 1V/div, H : 10µsec/div



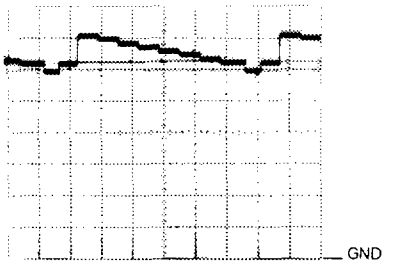
10 **Q1022 emitter (B OUT)**
V : 1V/div, H : 10µsec/div



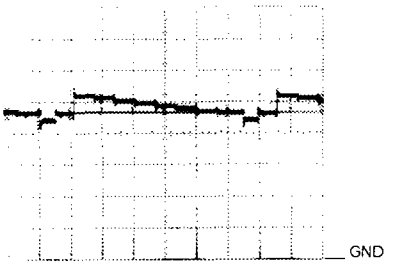
3 **Q1052 emitter (R - Y)**
V : 0.5V/div, H : 10µsec/div



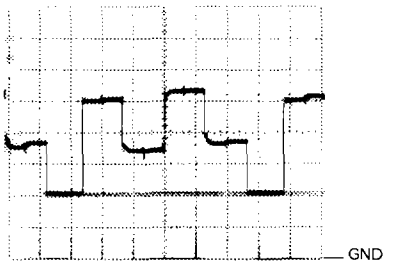
7 **IC1003 - pin 33 (Y SYNC)**
V : 1V/div, H : 10µsec/div



4 **IC1003 - pin 58 (Y IN)**
V : 1V/div, H : 10µsec/div



8 **Q1024 emitter (R OUT)**
V : 1V/div, H : 10µsec/div

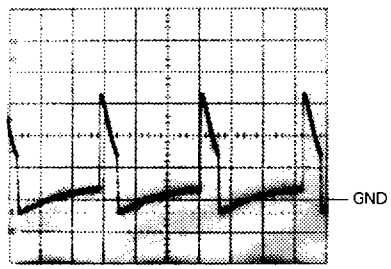


SCH-11 CONVERGENCE ASSY

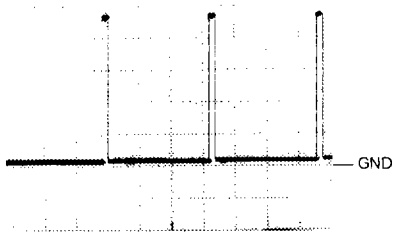
Input Signal : NTSC Color-bar , AV3 input
Picture quality : Standard
Range : DC range (Unless otherwise noted)

• Following waveforms are NTSC signal inputs.

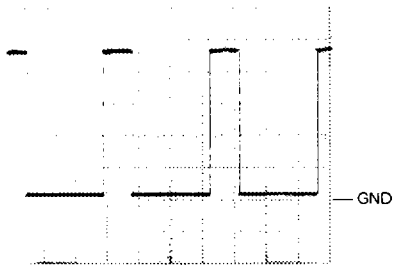
(1) P613(H. BLK)
V:1V/div, H:20 µsec/div



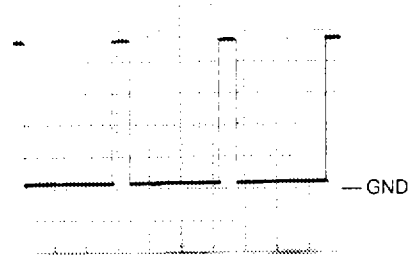
(2)-1 P611(V. BLK)
• Full mode
V:1V/div, H:5msec/div (NTSC)
H:20msec/div (PAL)



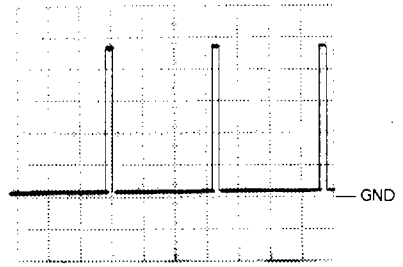
(2)-2 P611(V. BLK)
• Zoom mode
V:1V/div, H:5msec/div (NTSC)
H:20msec/div (PAL)



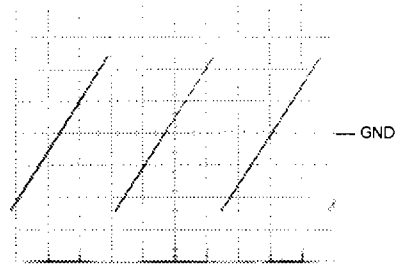
(2)-3 P611(V. BLK)
• Cinema mode
V:1V/div, H:5msec/div (NTSC)
H:20msec/div (PAL)



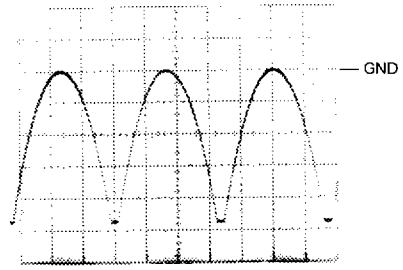
(2)-4 P611 (V. BLK)
• Natural mode
V:1V/div, H:5msec/div (NTSC)
H:20msec/div (PAL)



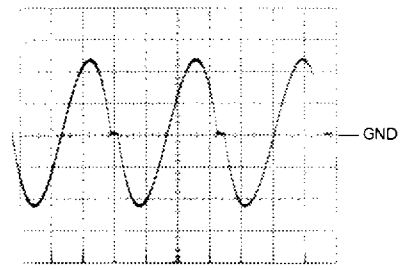
(3) IC604 - pin 4 (V1)
• Natural mode
V:0.5V/div, H:5msec/div (NTSC)
H:20msec/div (PAL)



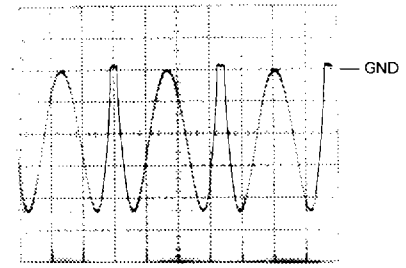
(4) IC604 - pin 5 (V2)
• Natural mode
V:0.5V/div, H:5msec/div (NTSC)
H:20msec/div (PAL)



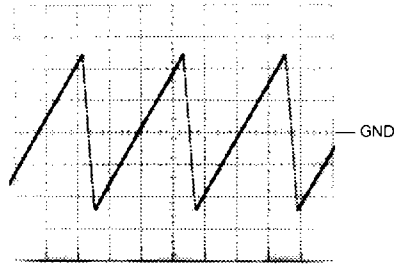
(5) IC604 - pin 6 (V3)
• Natural mode
V:0.5V/div, H:5msec/div (NTSC)
H:20msec/div (PAL)



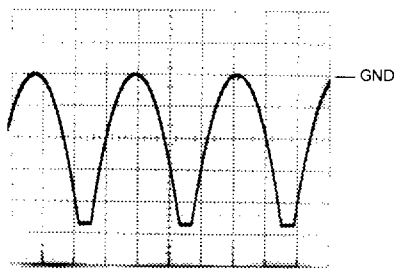
(6) IC604 - pin 7 (V4)
• Natural mode
V:0.5V/div, H:5msec/div (NTSC)
H:20msec/div (PAL)



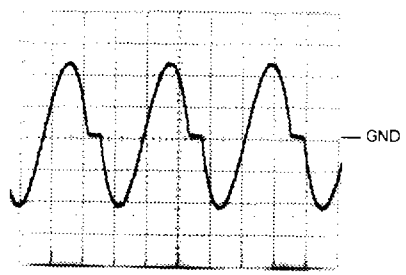
(7) IC603 - pin 4 (H1)
V:0.5V/div, H:20 µ sec/div



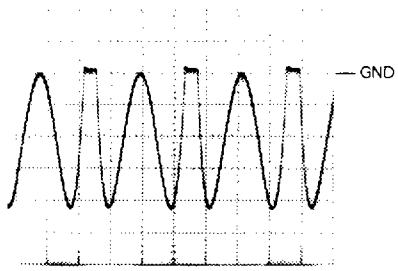
(8) IC603 - pin 5 (H2)
V:0.5V/div, H:20 µ sec/div



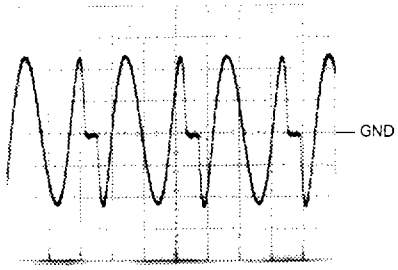
(9) IC603 - pin 6 (H3)
V:0.5V/div, H:20 µ sec/div



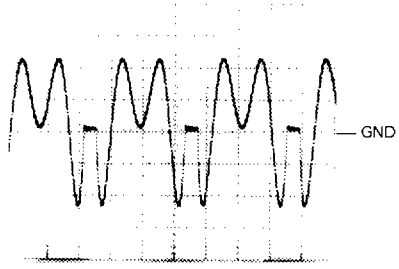
(10) **IC603 - pin 7 (H4)**
V:0.5V/div, H:20 μsec/div



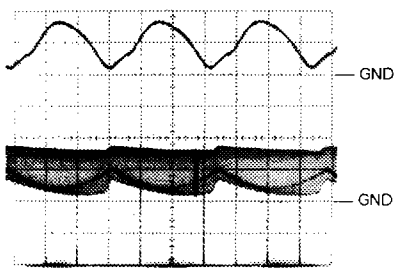
(11) **IC603 - pin 8 (H5)**
V:0.5V/div, H:20 μsec/div



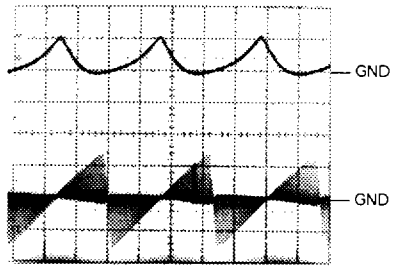
(12) **IC603 - pin 10 (H6)**
V:0.5V/div, H:20 μsec/div



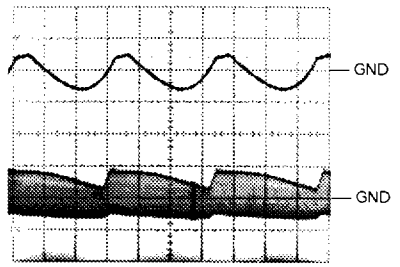
(13) **C4 - pin 4 (RHR)**
• Natural mode
Upper : H period
V:1V/div, H:20 μsec/div
Lower : V period
V:1V/div, H:5msec/div



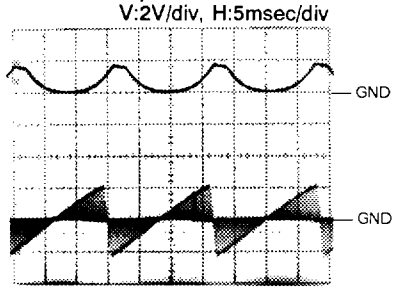
(14) **C4 - pin 1 (RVR)**
• Natural mode
Upper : H period
V:2V/div, H:20 μsec/div
Lower : V period
V:2V/div, H:5msec/div



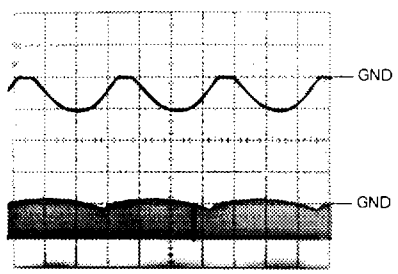
(15) **C5 - pin 4 (GHR)**
• Natural mode
Upper : H period
V:0.5V/div, H:20 μsec/div
Lower : V period
V:0.5V/div, H:5msec/div



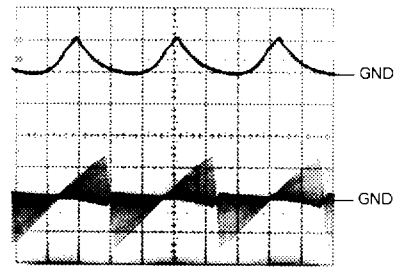
(16) **C5 - pin 1 (GVR)**
• Natural mode
Upper : H period
V:2V/div, H:20 μsec/div
Lower : V period
V:2V/div, H:5msec/div



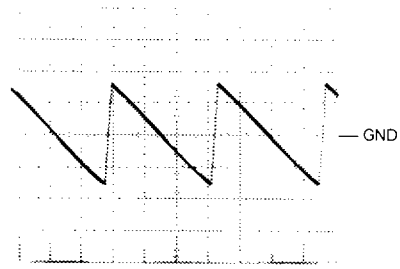
(17) **C6 - pin 4 (BHR)**
• Natural mode
Upper : H period
V:2V/div, H:20 μsec/div
Lower : V period
V:2V/div, H:5msec/div



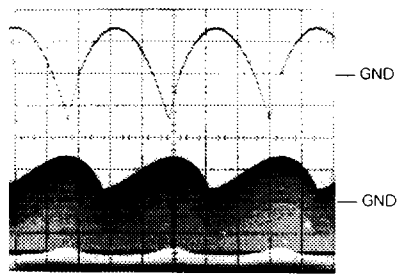
(18) **C6 - pin 1 (BVR)**
• Natural mode
Upper : H period
V:2V/div, H:20 μsec/div
Lower : V period
V:2V/div, H:5msec/div



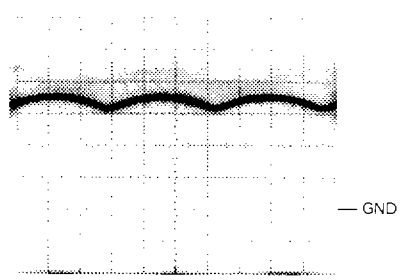
(19) **C6 - pin 6 (VR)**
• Natural mode)
V:0.5V/div, H:5msec/div



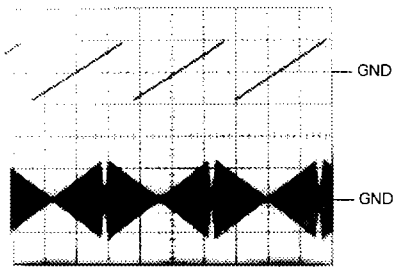
(20) **D625 Cathode (HV PARA)**
• Natural mode
Upper : H period
V:2V/div, H:20 μsec/div
Lower : V period
V:2V/div, H:5msec/div



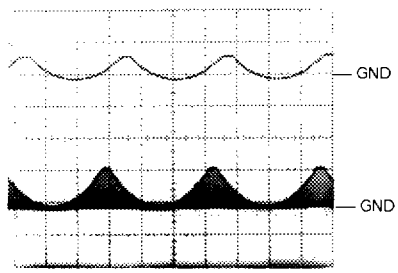
(21) **C1 - pin 8 (or foot of R680)(P.K.S)**
•Natural mode •V period
V:2V/div, H:5msec/div



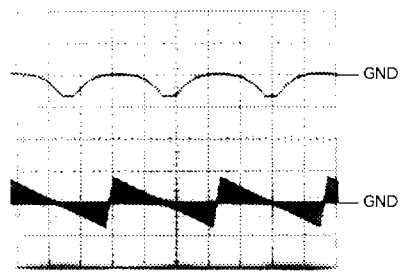
(22) C8 - pin 6 (V. KEY)
• Natural mode
Upper : H period
V:1V/div, H:20 μsec/div
Lower : V period
V:1V/div, H:5msec/div



(23) C8 - pin 7 (SUB PIN)
• Natural mode
Upper : H period
V:1V/div, H:20 μsec/div
Lower : V period
V:1V/div, H:5msec/div



(24) C8 - pin 5 (V. PIN)
• Natural mode
Upper : H period
V:1V/div, H:20 μsec/div
Lower : V period
V:1V/div, H:5msec/div



• Synchronous Frequency

	NTSC	PAL
H. sync	15.734kHz (63.556 μsec)	15.625kHz (64 μsec)
V.sync	59.94Hz (16.683msec)	50Hz (20msec)

IC603 (PA0053B)

Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	0.4	10	0
2	1.4	11	0.5
3	5.1	12	− 1.1
4	0	13	0.3
5	− 0.9	14	1.2
6	0	15	0
7	− 0.9	16	− 2.1
8	0	17	1.2
9	− 5.0	18	− 1.5

IC604 (PA0053B)

Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	0.3	10	0
2	1.1	11	0.4
3	5.1	12	− 0.9
4	0	13	0.3
5	− 0.8	14	1.1
6	0	15	0
7	− 1.1	16	− 0.9
8	− 0.1	17	1.2
9	− 4.9	18	− 1.5

IC605 (STK4277)

Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	0	14	0.5
2	0	15	0
3	− 1.8	16	0
4	− 1.1	17	0
5	——	18	0
6	0	19	0
7	0	20	0
8	0	21	24.8
9	0	22	25.5
10	0	23	0
11	0	24	− 25.2
12	0	25	− 25.6
13	0.6		

IC606 (STK4274)

Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	0	9	25.4
2	0	10	− 24
3	0	11	0
4	− 8.4	12	− 6.0
5	− 6.0	13	− 8.4
6	0	14	0
7	− 24	15	0
8	25.4		

IC607 (NJM072BD-E)

Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	− 0.1	5	0
2	0	6	0
3	0	7	0
4	− 5.0	8	5.0

IC608 (NJM072BD-E)

Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	− 0.1	5	− 0.1
2	0	6	− 0.1
3	0	7	− 0.2
4	− 4.9	8	5.0

IC609 (TC4066BP)

Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	0	8	− 0.9
2	0	9	− 0.9
3	0	10	0
4	0	11	− 0.9
5	5.0	12	− 4.9
6	5.0	13	− 4.9
7	− 5.0	14	5.0

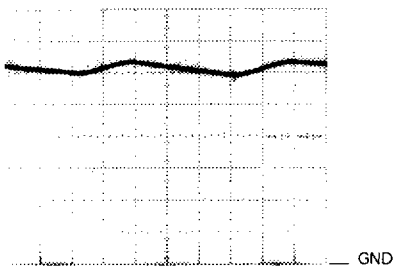
IC611 (TC4053BP)

Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	0	9	0
2	0	10	0
3	− 4.5	11	0
4	− 0.7	12	0
5	− 0.7	13	0
6	0	14	0
7	− 4.9	15	0
8	0	16	5.0

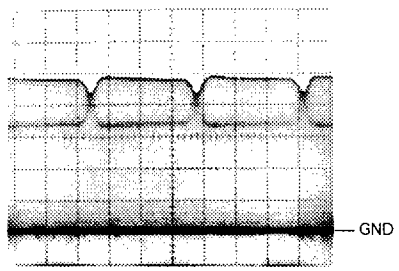
SCH - 14 to 16 POWER SUPPLY ASSY

Input Signal : Color-bar , AV3 input
Picture quality : Standard
Range : DC range (Unless otherwise noted)

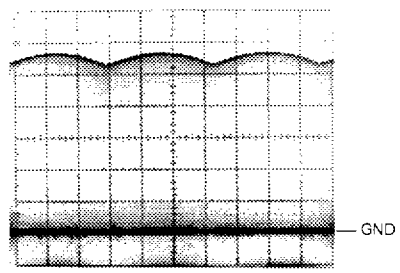
(1) D106 cathode
V : 20V/div, H : 2msec/div



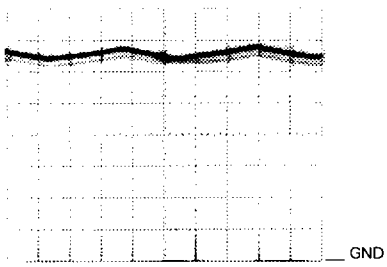
(4) - 2 Q309 collector
V : 200V/div, H : 5msec/div



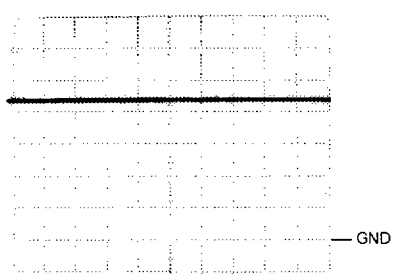
(7) - 2 Q208 collector
V : 200V/div, H : 5msec/div



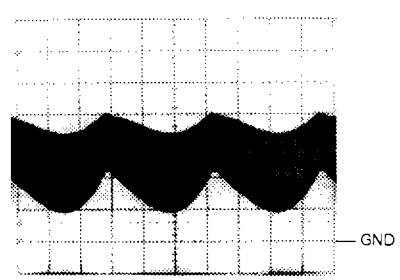
(2) C103 + side
V :2V/div, H : 2msec/div



(5) R343 (C322 + side) +220V
V : 50V/div, H : 2msec/div

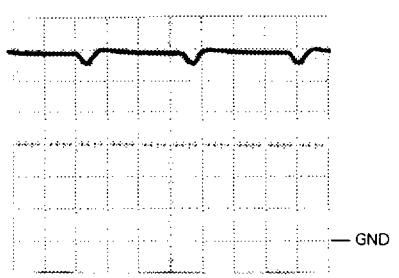


(8) Q210 collector
V : 200V/div, H : 5msec/div

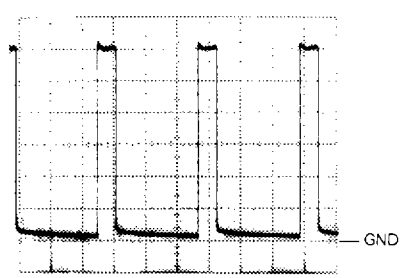


(3) Q104 drain
V : 50V/div, H : 10 μsec/div

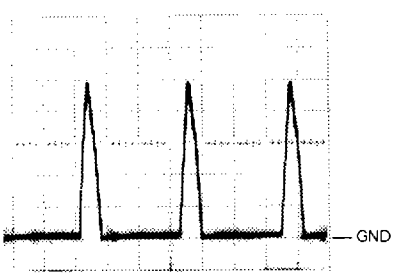
(6) R341 (Q308 emitter) H. V REG.OUT
V : 20V/div, H : 5msec/div



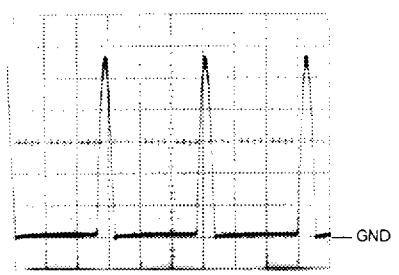
(9) TP202 (H. BLK)
V : 2V/div, H:20 μsec/div



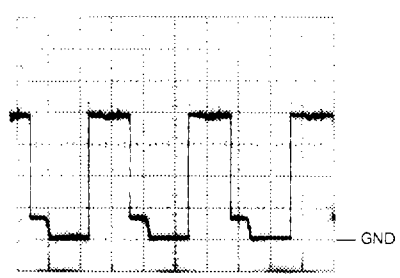
(4) - 1 Q309 collector
V : 200V/div, H : 20 μsec/div



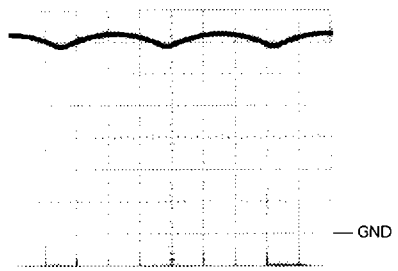
(7) - 1 Q208 collector
V : 200V/div, H : 20 μsec/div



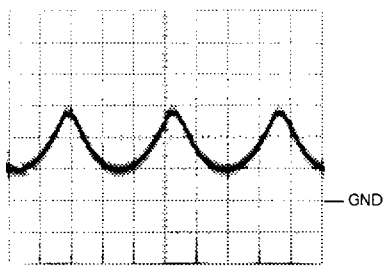
(10) Foot of R227 (H. DRIVE)
V : 1V/div, H:20 μsec/div



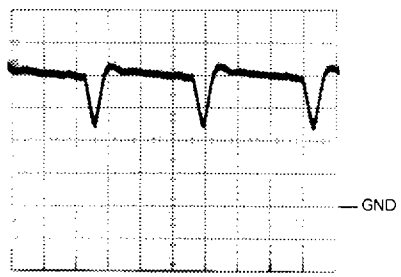
(11) **D213 cathode**
V : 20 V/div, H: 5msec/div



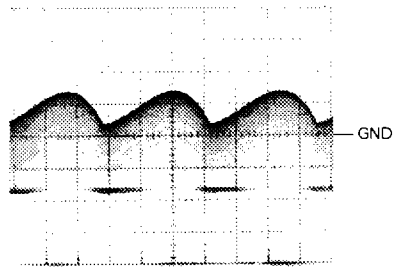
(15) **Q203 base**
V : 2V/div, H: 5msec/div



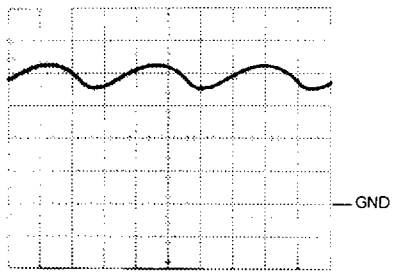
(19) **Q304 collector**
V : 20 V/div, H: 5msec/div



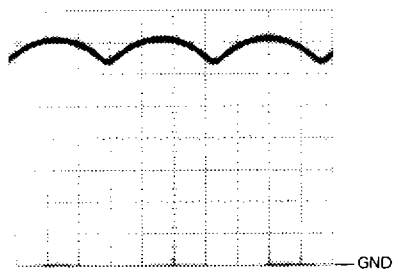
(12) **TP205 (HV. PARA)**
V : 2 V/div, H: 5msec/div



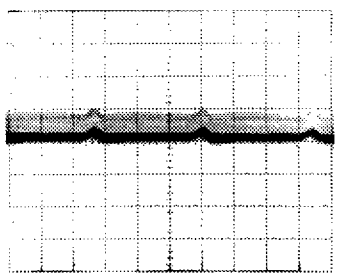
(16) **Q203 collector**
V : 20 V/div, H: 5msec/div



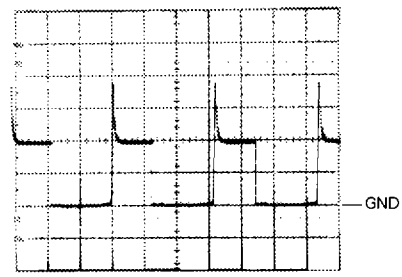
(13) **Between R203 and R250 (HV. PARA)**
V : 1 V/div, H: 5msec/div



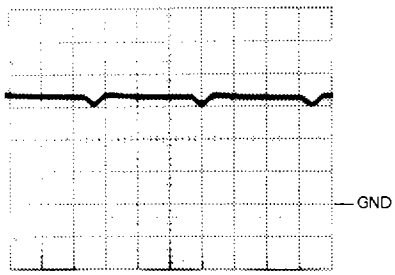
(17) **TP302 (X – RAY)**
V : 0.2 V/div, H: 5msec/div
AC range



(14) **Q205 and Q307 collector**
V : 20V/div, H : 20 μ sec/div



(18) **Q303 base**
V : 2V/div, H : 5msec/div



6. PCB PARTS LIST

NOTES:

- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

Ex.1 When there are 2 effective digits(any digit apart from 0), such as 560 ohm and 47k ohm(tolerance is shown by J=5%, and K=10%).

560 Ω → 56 × 10¹ → 561 ····· RD1/4PU 5 6 1 J
47k Ω → 47 × 10³ → 473 ····· RD1/4PU 4 7 3 J
0.5 Ω → 0R5 ····· RN2H 0 R 5 K
1 Ω → 1R0 ····· RS1P 1 R 0 K

Ex.2 When there are 3 effective digits(such as in high precision metal film resistors).

5.62k Ω → 562 × 10¹ → 5621 ····· RN1/4PC 5 6 2 1 F

- *Parts marked by ☆ are important parts which relate in X-rays radiation. If any of these parts need to be replaced, always replace with specified parts.*
- *Parts marked by ✕ are important parts which relate in X-rays radiation. If a failure occurs in any of these parts, replace the printed circuit board assembly where the relevant part has already been adjusted as a working component. Do not replace the actual part itself. If any part marked by ✕ is replaced, there is danger of being exposed to X-rays.*

LIST OF ASSEMBLIES

Mark	No.	Description	Part No.
		CONVERGENCE ASSY	AWV1520
		VIDEO·UCOM ASSY	AWV1542
NSP		TUNER ASSY (SD-T50W1)	AWV1543
NSP		TUNER ASSY (SD-T430W1)	AWV1586
		├ TUNER ASSY	AWZ6075
		├ R CONV DAC ASSY (SD-T50W1)	AWZ6076
		├ R CONV DAC ASSY (SD-T43W1)	AWZ6152
		├ G CONV DAC ASSY (SD-T50W1)	AWZ6077
		├ G CONV DAC ASSY (SD-T43W1)	AWZ6153
		├ B CONV DAC ASSY (SD-T50W1)	AWZ6078
		├ B CONV DAC ASSY (SD-T43W1)	AWZ6154
		├ A CONNECTOR ASSY	AWZ6079
		├ B CONNECTOR ASSY	AWZ6080
		└ C CONNECTOR ASSY	AWZ6081
NSP		AV I/O ASSY	AWV1544
		├ AV I/O ASSY	AWZ6082
		├ FRONT CONTROL ASSY	AWZ6083
		├ AV2 ASSY	AWZ6084
NSP		└ S TERMINAL ASSY	AWZ6085
NSP		CRT DRIVE ASSY	AWV1545
		├ AUDIO ASSY	AWZ6086
		├ R CRT DRIVE ASSY	AWZ6087
		├ G CRT DRIVE ASSY	AWZ6088
		├ B CRT DRIVE ASSY	AWZ6089
		├ AC IN ASSY	AWZ6090
		├ Y/C ASSY	AWZ6091
		├ D CONNECTOR ASSY	AWZ6092
		├ POWER DOWN ASSY	AWZ6093
		└ RELAY DRIVE ASSY	AWZ6094
☆		POWER SUPPLY ASSY	AWV1546
		DIGITAL ASSY	AWV1548
		TV FRONT END	AXF1085

CONVERGENCE ASSY

Mark	No.	Description	Part No.
		SEMICONDUCTORS	
		IC607, IC608, IC612	NJM072BD-E
		IC602	NJM78M05FAS
		IC601	NJM79M05FA
		IC603, IC604	PA0053B
		IC606	STK4274
		IC605	STK4277
		IC610	TC4052BP
		IC611	TC4053BP
		IC609	TC4066BP
		Q603, Q608, Q616	2SA1048
		Q601, Q602, Q604-Q606	2SC2458
		Q609-Q613, Q615, Q620	2SC2458
		D672, D673	1SS108
		D711	AEL1099
		D602, D603, D612, D675	HSS104-02
		D680, D681, D683, D684, D720	HSS104-02
		D613, D615, D618, D621, D622	MTZJ12
		D624, D625, D627, D628	MTZJ12
		D630-D638, D641, D645-D651	MTZJ12
		D653-D668, D670, D671, D674	MTZJ12
		D677-D679, D682, D685	MTZJ12
		D700-D710	MTZJ12
		D652	MTZJ20
		D606-D609	MTZJ6.8
		D611	RD5.1ESB3
		D686-D699	S5688G
		CAPACITORS	
		C702	CCCSL151J50
		C689	CEANP010M50
		C688	CEANP100M50
		C609, C638-C642	CEAS010M50
		C674	CEAS100M50
		C613, C621-C623, C629, C630	CEAS101M10
		C647, C657, C664-C667	CEAS101M10
		C677, C678, C706, C708	CEAS101M10
		C662, C673, C699	CEAS220M50

Mark	No.	Description	Part No.
	C676		CEAS221M10
	C687		CEAS2R2M50
	C658, C660		CEAS330M35
	C614, C615, C649, C650		CEAS331M6
	C661		CEAS470M25
	C643		CEASR47M50
	C605, C606		CEHAQ101M10
	C603, C604		CEHAQ470M25
	C710, C712		CEHAQ470M35
	C679-C683, C692, C696		CEHAQ471M35
	C663		CFTYA184J50
	C645, C656		CFTYA224J50
	C691, C713		CKCYB102K50
	C659, C675		CKCYB331K50
	C697, C700		CKCYB471K50
	C703		CKCYB681K50
	C709, C711		CKCYF103Z50
	C601, C602, C607, C608, C612		CKCYF473Z50
	C616-C620, C624, C625		CKCYF473Z50
	C627, C628, C631, C632, C646		CKCYF473Z50
	C648, C652-C655, C668-C672		CKCYF473Z50
	C684-C686, C693-C695, C698		CKCYF473Z50
	C701, C704, C705, C707, C714		CKCYF473Z50
	C633-C636		CKCYX473M16
	C611, C626		CQMA102J50
	C637, C644		CQMA471J50
	C610		CQPA152J100
RESISTORS			
	R603-R606, R622, R627		RD1/2PM221J
	R828-R830		RD1/2PM221J
	R771		RD1/2PM271J
	R772-R774		RD1/2PM470J
	R730, R735, R750		RD1/2PMFL220J
	R753		RD1/2PMFL272J
	R769		RN1/4PC1001F
	R729		RS2LMFR47J
	R775		RS3LMF010J
	R602, R804		RS3LMF100J
	R759, R762, R764, R767, R768		RS3LMF3R3J
	R770		RS3LMF3R3J
	R601, R805		RS3LMF4R7J
	R734		RS3LMF6R8J
	R736, R752		RS3LMFR47J
	VR602		VRTS6VS223
	VR603		VRTS6VS472
	VR601		VRTS6VS473
	Other Resistors		RD1/4PU□□□J
OTHERS			
	SCREW		ABA1056
	HEAT SINK M		ANH-697
	SHIELD CASE		ANH1165
	SCREW		BBZ30P080FCU
	SCREW		BBZ30P080FZK
	CN605, CN607, CN609	11P PLUG	KM200IA1
	CN606	12P PLUG	KM200IA12
	CN604	13P PLUG	KM200IA13
	CN608	15P PLUG	KM200IA15
	CN603	PLUG 11-P	KM250MA11B
	CN611	PLUG 6-P	KM250MA6
	CN612	PLUG 6-P	KM250MA6B
	CN610	PLUG 6-P	KM250MA6R
	CN601	PLUG 8-P	KM250MA8R
	CN602	PLUG 9-P	KM250MA9B
	SCREW		PBZ30P080FMC

VIDEO•UCOM ASY

SEMICONDUCTORS

	IC3303	AT24C16-10PC
	IC1007	BA7606
	IC1001	CX20125
	IC1005	MC14053BCP
	IC3302	MC34064P
	IC1009	NJM7805FAS
	IC1008	NJM7809FAS
	IC1002	PA0030
	IC3301	PD5372
	IC1003	TA8759BN
	IC3304, IC3305	TC4094BP
	IC1006	TC74HC4053AP
	IC1004	TDA4566
	Q1003, Q1013, Q1015, Q1016, Q1018	2SA1048
	Q1022-Q1024, Q1028, Q1038, Q1041	2SA1048
	Q1054, Q1062, Q1067, Q1068, Q1070	2SA1048
	Q1073, Q1075, Q1077, Q1080, Q1082	2SA1048
	Q1086, Q1087, Q1093, Q1098, Q1099	2SA1048
	Q3301, Q3309, Q3311-Q3316, Q3331	2SA1048
	Q3344	2SA1048
	Q1001, Q1002, Q1004-Q1008	2SC2458
	Q1011, Q1012, Q1017, Q1019-Q1021	2SC2458
	Q1025-Q1027, Q1029-Q1037	2SC2458
	Q1039, Q1040, Q1042-Q1049	2SC2458
	Q1051-Q1053, Q1056, Q1058, Q1060	2SC2458
	Q1063, Q1065, Q1066, Q1071, Q1072	2SC2458
	Q1074, Q1076, Q1078, Q1079, Q1081	2SC2458
	Q1083-Q1085, Q1088-Q1092	2SC2458
	Q1094-Q1097, Q1100, Q3302-Q3307	2SC2458
	Q3310, Q3317-Q3323, Q3325-Q3327	2SC2458
	Q3329, Q3330, Q3343	2SC2458
	Q3328	2SC2878
	Q3308	2SD880
	Q1057, Q1059, Q1061	2SK117
	Q1009, Q1010, Q1014, Q1050, Q1055	DTC124ES
	Q1064, Q1069, Q1101, Q3332-Q3342	DTC124ES
	D1001-D1005, D1007-D1010	HSS104-02
	D1012-D1015, D1017-D1036, D1040	HSS104-02
	D1043-D1045, D1048-D1059	HSS104-02
	D1062-D1065, D1072-D1089	HSS104-02
	D1091-D1094, D1096-D1108, D1118	HSS104-02
	D1121, D1123, D1124, D1126-D1128	HSS104-02
	D3302, D3305-D3311, D3313-D3318	HSS104-02
	D3354, D3362-D3366, D3388-D3391	HSS104-02
	D1066-D1071, D1090, D1095, D1117	MTZJ12

Mark	No.	Description	Part No.
	D3360, D3383-D3386		MTZJ15
	D3301, D3303, D3304, D3319-D3340		MTZJ6. 8
	D3342-D3353, D3356, D3361		MTZJ6. 8
	D3367-D3382, D3387, D3392		MTZJ6. 8
	D1047		RD3. 0ESB2
	D1041, D1042		RD4. 3ESB3
	D3312		RD5. 1ESB2
	D1011		RD5. 1ESB3
	D3341, D3355, D3357-D3359		RD6. 2ESB2
	D1006, D1016, D1037-D1039		S5688G
COILS			
	L1006		ATG1009
	L1010		ATG1026
	L1001, L1008		ATG1027
	L1007		ATG1033
	DL1002		ATN1014
	DL1001		ATN1036
	L3301		LAU100K
	L1003		LAU121K
	L1002, L1014		LAU270K
	L1005		LAU390K
	L1004		LAU3R3K
	L1015, L1016		LAU470K
	L1011-L1013		LAU6R8K
	L1009		LAU8R2K
CAPACITORS			
	TC3301		ACM-020
	C1033		CCCCH070D50
	C1042		CCCCH080D50
	C1076		CCCCH120J50
	C1022, C1024		CCCCH121J50
	C1104		CCCCH180J50
	C1026, C1032		CCCCH181J50
	C1044, C1072, C1129		CCCCH220J50
	C1040, C1067		CCCCH270J50
	C1080		CCCCH330J50
	C1028, C1077		CCCCH390J50
	C1053		CCCCH470J50
	C1100		CCCCH820J50
	C1054, C1058, C1090-C1092		CCCSL101J50
	C1116, C1117, C1145, C1173, C1174		CCCSL101J50
	C3336, C3339-C3342		CCCSL101J50
	C1081, C1087		CCCSL121J50
	C1008, C1009, C1011, C1012, C1088		CCCSL151J50
	C1016, C1107, C1157, C1158		CCCSL221J50
	C3332, C3333		CCCSL221J50
	C3324		CCCSL270J50
	C1144		CCCSL271J50
	C1027		CCCSL390J50
	C1089		CCCSL560J50
	C1017, C1115, C1125, C3331		CCCSL680J50
	C1113, C1114, C3345		CCCSL820J50
	C1134, C1135, C1171		CEANP0R1M50
	C1073		CEANP2R2M50
	C1001, C1021, C1031, C1064, C3311		CEAS010M50
	C3314, C3317-C3320, C3330		CEAS010M50

Mark	No.	Description	Part No.
	C3307		CEAS0R1M50
	C1002, C1018, C1036, C3302		CEAS100M50
	C1037, C3312, C3322, C3334, C3337		CEAS101M10
	C3343		CEAS101M10
	C1007, C1025, C1074, C1093, C1098		CEAS101M25
	C1101, C1122, C1168, C1175		CEAS101M25
	C1004, C1020, C1060		CEAS220M50
	C1095		CEAS221M16
	C1041		CEAS222M16
	C1085, C1097		CEAS331M16
	C1049, C3306		CEAS3R3M50
	C1010, C1014, C1029, C1061, C1105		CEAS470M25
	C1110, C1111, C1120, C1136, C1137		CEAS470M25
	C1139, C1141, C1143, C1146		CEAS470M25
	C1161, C1162, C1182, C3315		CEAS470M25
	C3310		CEAS471M25
	C1006, C1112, C1155, C1170		CEAS4R7M50
	C1169		CEAS6R8M50
	C1130-C1133, C1147, C1148		CEASR33M50
	C1019, C1118, C1119		CEASR47M50
	C1015		CEASR68M50
	C1150		CEHAQ102M10
	C1149		CEHAQ102M16
	C1153, C1154		CEHAQ470M25
	C3301, C3346		CFTXA103J50
	C1046, C1048, C1052, C1055, C1057		CFTXA104J50
	C1059		CFTXA104J50
	C1079		CFTXA105J50
	C1005, C1069, C1176-C1179		CFTXA224J50
	C1038, C1181		CKCYB102K50
	C1034, C1047, C1051, C1056, C1068		CKCYB103K50
	C1075, C3305, C3308		CKCYB103K50
	C1084		CKCYB331K50
	C1082, C1083		CKCYB391K50
	C1124, C1126		CKCYB471K50
	C3303		CKCYB472K50
	C1003		CKCYB821K50
	C1035, C1043, C1045, C1050, C1065		CKCYF103Z50
	C1071, C1086, C1103, C1121, C1123		CKCYF103Z50
	C1138, C1140, C1142, C1151, C1152		CKCYF103Z50
	C1183, C3304, C3309, C3313, C3316		CKCYF103Z50
	C3323, C3325, C3329, C3335, C3338		CKCYF103Z50
	C3344		CKCYF103Z50
	C1156		CKCYF223Z50
	C1160, C1167		CKCYF472Z50
	C1013, C1106, C1163		CKCYF473Z50
	C1023, C1063, C1094, C1096, C1102		CKCYX104M25
	C1128		CKCYX104M25
	C1099		CQMA223J50
	C1062		CQMA393J50
	C1070		CQMA472J50
	C1039, C3321		CQMA473J50
	C1066, C1078		CQMA563J50
RESISTORS			
	R1048		ACN1050
	R1190-R1192		RD1/2PM100J
	R3329		RD1/2PM122J
	R1170, R1172, R1174, R3474, R3475		RD1/2PM221J
	R1146-R1148, R1189		RD1/2PM471J

Mark	No.	Description	Part No.
	R1197		RD1/2PMFL4R7J
	R3422		RD1/4PMFL3R3J
	R3567		RN1/4PC2201F
	R1431		RS1LMF010J
	R1430		RS1LMFR47J
	R3326		RS1MMF150J
	R1397		RS3LMF1R8J
	R1049		RS3LMF4R7J
	VR1001 (470Ω)		ACP1039
	VR1002, VR1003		VRTS6HS471
	Other Resistors		RD1/4PU□□□J

OTHERS

CN1003	SOCKET 50-P	AKP1161
HEAT SINK		ANH-309
HEAT SINK		ANH-880
SHIELD CASE		ANH1165
SHIELD PLATE		ANK1500
X3301	CERAMIC RESONATOR	ASS1015
X1003	CERAMIC RESONATOR	ASS1019
X1001	CRYSTAL RESONATOR	ASS1091
X1002	CRYSTAL RESONATOR	ASS1092
SCREW		BBZ30P080FMC
CN1009	15P PLUG	KM200IA15
CN1010	5P PLUG	KM200IA5
CN3305	8P PLUG	KM200IA8
CN1007	9P PLUG	KM200IA9
CN3302	PLUG 11-P	KM250MA11
CN3301	PLUG 6-P	KM250MA6
CN1001	PLUG 9-P	KM250MA9R
CN1011	13P SOCKET	KP250NA13
CN1012, CN3306	SOCKET 15-P	KP250NA15
CN3304	SOCKET 4-P	KP250NA4
CN3303	SOCKET 7-P	KP250NA7

TUNER ASSY

SEMICONDUCTORS

	IC1752	AT24C01A10PC
	IC1651	CXA1734S
	IC1701	LA7710
	IC1501	UPC1823ACU
	IC1751	UVS1101A24
	Q1524, Q1527, Q1528, Q1533, Q1756	2SA1048
	Q1501, Q1510, Q1512, Q1517, Q1523	2SC2458
	Q1525, Q1529-Q1531, Q1536, Q1543	2SC2458
	Q1545, Q1651, Q1653, Q1704	2SC2458
	Q1751-Q1754, Q1757, Q1758	2SC2458
	Q1781, Q1782	2SC2458
	Q1502-Q1507, Q1535, Q1540, Q1541	2SC2668
	Q1701-Q1703, Q1759	2SC2668
	Q1518, Q1519, Q1526, Q1532, Q1783	2SC2878
	Q1521, Q1522	2SK246
	Q1511, Q1513-Q1515, Q1542, Q1544	XDC124ES
	Q1755	XDC124ES
	D1508-D1514, D1517, D1533	1SS85
	D1501-D1506, D1519-D1521	HSS104-02
	D1523-D1526, D1530-D1532	HSS104-02
	D1534, D1535, D1753	HSS104-02
	D1536, D1651, D1652	MTZJ15
	D1515, D1516, D1527, D1537	MTZJ6.8
	D1507	RD33ESB3
	D1518	RD5.1ESB
	D1752	RD8.2ESB2

COILS AND FILTERS

	L1509, L1705	ATC-250
	L1510	ATE-067
	F1510	ATF-114
	F1504	ATF1046
	F1508, F1513, F1514	ATF1051
	F1502	ATF1052
	F1501	ATF1053
	F1505, F1507	ATF1063
	F1509	ATF1132
	F1511	ATF1137
	F1512	ATF1138
	F1503	ATF1140
	F1506	ATF1180
	F1701	ATF1181
	L1517	ATG1031
	L1515, L1756, L1757, L1786	ATX1008
	L1528	LAU100K
	L1503, L1508	LAU1R2J
	L1507, L1702, L1704	LAU1R8J
	L1501, L1502, L1511, L1516	LAU2R2K
	L1518-L1520, L1651, L1703	LAU2R2K
	L1785	LAU2R7J
	L1753	LAU2R7K
	L1782	LAU3R3J
	L1751	LAU3R3K
	L1512	LAU3R9J
	L1513, L1783, L1784	LAU4R7J
	L1752, L1754	LAU4R7K
	L1781	LAU5R6J
	L1514	LAU6R8J
	L1504, L1701	LAUR22J

CAPACITORS

	C1660 (3.3μF, 50V)	ACH1128
	C1653 (10μF, 50V)	ACH1129
	TC1501	ACM-022
	C1519	CCCCH010C50
	C1518, C1550	CCCCH020C50
	C1506, C1507, C1510, C1539, C1551	CCCCH030C50
	C1515, C1516, C1540, C1614, C1634	CCCCH040C50
	C1517, C1557, C1561, C1613, C1633	CCCCH050C50
	C1508, C1611	CCCCH060D50
	C1612	CCCCH070D50
	C1548, C1584	CCCCH080D50
	C1556	CCCCH090D50
	C1543	CCCCH120J50
	C1701, C1781	CCCCH121J50
	C1753	CCCCH151J50
	C1617, C1618	CCCCH180J50
	C1619	CCCCH220J50
	C1716	CCCCH390J50
	C1783	CCCCH271J50
	C1565	CCCCH330J50

Mark	No.	Description	Part No.
	C1784, C1788		CCCCH560J50
	C1531		CCCCH680J50
	C1782		CCCCH820J50
	C1527-C1530, C1564, C1602		CCCSL101J50
	C1754, C1755		CCCSL121J50
	C1620		CCCSL221J50
	C1597		CCCSL470J50
	C1512		CCCSL560J50
	C1621		CCCSL680J50
	C1576, C1654, C1659, C1720		CEAS010M50
	C1503, C1572, C1596, C1598, C1652		CEAS100M50
	C1713, C1714		CEAS100M50
	C1526, C1767		CEAS101M10
	C1552, C1554, C1667, C1705, C1707		CEAS101M25
	C1523		CEAS102M16
	C1715		CEAS220M50
	C1604		CEAS221M10
	C1703		CEAS221M16
	C1570, C1579, C1588, C1590, C1591		CEAS470M25
	C1593, C1599, C1600, C1670, C1752		CEAS470M25
	C1757, C1763, C1766, C1768, C1771		CEAS470M25
	C1786		CEAS470M25
	C1586		CEAS471M16
	C1574, C1655, C1656, C1664-C1666		CEAS4R7M50
	C1668, C1669, C1758-C1762		CEAS4R7M50
	C1772, C1773, C1790, C1791		CEAS4R7M50
	C1501		CEAS6R8M50
	C1568, C1577, C1581, C1661		CEASR47M50
	C1657		CFTXA224J50
	C1622		CFTXA334J50
	C1562		CFTYA104J50
	C1504, C1505, C1509, C1511		CKCYB102K50
	C1513, C1514, C1520, C1536, C1542		CKCYB102K50
	C1545-C1547, C1549, C1553, C1555		CKCYB102K50
	C1558, C1559, C1582, C1583, C1585		CKCYB102K50
	C1595, C1610, C1625, C1702, C1708		CKCYB102K50
	C1710		CKCYB102K50
	C1560, C1563, C1566, C1567, C1580		CKCYB103K50
	C1605, C1616, C1711, C1712, C1717		CKCYB103K50
	C1774		CKCYB103K50
	C1573, C1651, C1658, C1719		CKCYB222K50
	C1792		CKCYB681K50
	C1521, C1522, C1524, C1525, C1534		CKCYF103Z50
	C1544, C1569, C1578, C1587, C1589		CKCYF103Z50
	C1592, C1594, C1601, C1671, C1672		CKCYF103Z50
	C1704, C1706, C1709, C1718, C1751		CKCYF103Z50
	C1756, C1764, C1765, C1769, C1770		CKCYF103Z50
	C1785, C1787, C1789		CKCYF103Z50
	C1575		CQMA153J50
	C1663		CQMA272J50
	C1662		CQMA473J50

RESISTORS

	R1504	RD1/2PM562J
	R1517, R1518	RD1/2PM681J
	R1550	RD1/4PMFL101J
	R1539	RD1/4PMFL331J
	R1513, R1533, R1710	RD1/4PMFL471J
	R1703	RD1/4PMFL681J
	R1655	RN1/4PC4302F
	R1656	RN1/4PC6202F
	R1606	RS2LMF4R7J
	VR1502(4.7kΩ)	ACP1042
	VR1501	VRTS6VS105
	Other Resistors	RD1/4PU□□□J

OTHERS

	PLUG CORD	ADE-082
	KN9999 GROUND PLATE	ANK-142
	X1501 CERAMIC RESONATOR(15.675kHz)	ASS1122
	SCREW	BBZ30P060FMC

R CONV DAC ASSY

• CONTRAST OF AWZ6076 AND AWZ6152

AWZ6076 and AWZ6152 have the same construction except for the following :

Symbol & Description	Part No.	
	AWZ6076	AWZ6152
R3036	Not used	RD1/4PU202J
R3044	RD1/4PU134J	RD1/4PU154J

• PARTS LIST FOR AWZ6076

SEMICONDUCTORS

	IC3001	PM0002B
	D3002-D3005, D3007, D3008	MTZJ12
	D3001, D3006	MTZJ6.8
	TH3001	NTH5D102KA

CAPACITORS

	C3006, C3007, C3009, C3010	CCCCH101J50
	C3008	CEAS100M50
	C3003, C3005	CEAS331M6
	C3001, C3002, C3004	CKCYF473Z50

RESISTORS

	All Resistors	RD1/4PU□□□J

OTHERS

	CN3002 11P SOCKET	KP200IA11L
	CN3001 13P SOCKET	KP200IA13L

Mark	No.	Description	Part No.

G CONV DAC ASSY

• CONTRAST OF AWZ6077 AND AWZ6153

AWZ6077 and AWZ6153 have the same construction except for the following :

Symbol & Description	Part No.	
	AWZ6077	AWZ6153
R3139	RD1/4PU133J	RD1/4PU153J

• PARTS LIST FOR AWZ6077

SEMICONDUCTORS

IC3101	PM0002B
D3102-D3105, D3107, D3108	MTZJ12
D3101, D3106	MTZJ6.8

CAPACITORS

C3106, C3107, C3109, C3110	CCCCH101J50
C3108	CEAS100M50
C3103, C3105	CEAS331M6
C3101, C3102, C3104	CKCYF473Z50

RESISTORS

All Resistors	RD1/4PU□□□J

OTHERS

CN3102 11P SOCKET	KP200IA11L
CN3101 12P SOCKET	KP200IA12L

B CONV DAC ASSY

• CONTRAST OF AWZ6078 AND AWZ6154

AWZ6078 and AWZ6154 have the same construction except for the following :

Symbol & Description	Part No.	
	AWZ6078	AWZ6154
R3236	RD1/4PU133J	RD1/4PU153J
R3238	RD1/4PU104J	RD1/4PU683J
R3239	RD1/4PU184J	RD1/4PU154J

• PARTS LIST FOR AWZ6078

SEMICONDUCTORS

IC3201	PM0002B
D3202-D3205, D3207, D3208	MTZJ12
D3201, D3206	MTZJ6.8
TH3201	NTH5D102KA

CAPACITORS

C3206, C3208-C3210	CCCCH101J50
C3207	CEAS100M50
C3203, C3205	CEAS331M6
C3201, C3202, C3204	CKCYF473Z50

RESISTORS

All Resistors	RD1/4PU□□□J

OTHERS

CN3202 11P SOCKET	KP200IA11L
CN3201 15P SOCKET	KP200IA15L

Mark	No.	Description	Part No.

A CONNECTOR ASSY

CAPACITORS

C2219	CEAS330M50

OTHERS

CABLE HOLDER	AKT1007
CN2294 8P SOCKET	KP200IA8L
CN2293 9P SOCKET	KP200IA9L

B CONNECTOR ASSY

OTHERS

CABLE HOLDER	AKT1007
CN2391 10P SOCKET	KP200IA10L
CN2392 11P SOCKET	KP200IA11L

C CONNECTOR ASSY

OTHERS

CN2192 11P SOCKET	KP200IA11L
CN2191 12P SOCKET	KP200IA12L

AV I/O ASSY

SEMICONDUCTORS

IC1801	BA7230LS
IC2001	CF72307
IC2002	CF72416N
IC1802	CXA1845Q
IC2003	LC32464P-80
IC2004	MC34064P
IC2005	NJM7805FAS
Q1801, Q1802, Q1807, Q1811-Q1814	2SA1048
Q1825, Q1831, Q2004, Q2014	2SA1048
Q1803-Q1806, Q1808-Q1810	2SC2458
Q1818-Q1824, Q1826, Q1827, Q1829	2SC2458
Q2002, Q2003, Q2008-Q2010, Q2013	2SC2458
Q2006	2SD880
Q1828, Q1830, Q2005, Q2007	DTC124ES
Q2011, Q2012	DTC124ES
D1801, D1802, D1804, D1805	HSS104-02
D1807-D1810, D1812, D1813	HSS104-02
D1815-D1818, D1820, D1821	HSS104-02
D1823-D1826, D1828, D1829	HSS104-02
D1831, D1832, D1834, D1835	HSS104-02
D1837-D1844, D1846-D1848	HSS104-02
D1850-D1855, D1858-D1867, D2007	HSS104-02
D2009, D2010, D2012-D2017	HSS104-02
D1803, D1806, D1811, D1814, D1819	MTZJ12
D1822, D1827, D1830, D1833, D1836	MTZJ12
D1849, D1856, D1857, D1870	MTZJ12
D2011	MTZJ15
D2001-D2006	MTZJ6.2
D1845	RD3.6ESB
D2008	RD5.1ESB3

Mark	No.	Description	Part No.
COILS			
	L2001, L2002		ATX1008
	L1801, L1803, L1806-L1809		LAU010J
	L2003-L2006		LAU1R5J
	L2007		LAU270J
	L1815		LAU2R2J
	L1804, L1805, L1813, L1814		LAU560K
CAPACITORS			
	C2011, C2012		CCCCH150J50
	C2005		CCCCH180J50
	C2039		CCCCH181J50
	C2008, C2013		CCCSL221J50
	C1845-C1848, C2022		CEAS010M50
	C1876		CEAS100M50
	C1837, C1838, C2003, C2009, C2015		CEAS101M10
	C2018, C2020, C2023, C2026		CEAS101M10
	C2028, C2029, C2032		CEAS101M10
	C1856, C1857, C2001		CEAS101M25
	C1818, C1822, C1874		CEAS102M10
	C1824, C1825, C1844, C1863-C1866		CEAS220M50
	C1869, C1870, C1872, C1873, C1879		CEAS220M50
	C2031		CEAS220M50
	C2017		CEAS221M10
	C1881		CEAS222M10
	C1860, C2034		CEAS330M35
	C1826, C1839, C1850, C1880, C2006		CEAS470M25
	C2014, C2030, C2036		CEAS470M25
	C2040, C2041		CEAS470M25
	C1806, C1809, C1810, C1812, C1813		CEAS4R7M50
	C1823, C1829, C1831-C1836		CEAS4R7M50
	C1840-C1843, C1859, C1861		CEAS4R7M50
	C1867, C1868, C1882		CEAS4R7M50
	C1801, C1802, C1804, C1805, C1808		CKCYB222K50
	C1811, C1815, C1820, C1821, C1858		CKCYB222K50
	C1851, C1853-C1855, C1871, C1875		CKCYF103Z50
	C1883, C2033, C2035, C2037, C2038		CKCYF103Z50
	C2007, C2042		CKCYF223Z50
	C1849, C2002, C2004, C2010, C2016		CKCYF473Z50
	C2019, C2021, C2024, C2025, C2027		CKCYF473Z50
RESISTORS			
	R1873, R1877		RD1/2PM101J
	R1959, R2031		RD1/2PM221J
	R2029		RD1/2PM2R7J
	R1969		RD1/2PMFL390J
	R2006		RS1LMF3R9J
	R2001		RS3LMF5R6J
	Other Resistors		RD1/4PU□□□J
OTHERS			
	PIN JACK(9P)		AKB1232
	CN1802 CONNECTOR		AKP1003
	HEAT SINK M		ANH-697
	X2001 CRYSTAL RESONATOR		ASS1081
	SCREW		BBZ30P080FMC
	CN1813 11P PLUG		KM200IA11
	CN1812 12P PLUG		KM200IA12
	CN1811 PLUG 10-P		KM250MA10
	CN2001 13P PLUG		KM250NA13L
	CN1814, CN1815 PLUG 15-P		KM250NA15L

Mark	No.	Description	Part No.
FRONT CONTROL ASSY			
SEMICONDUCTORS			
	IC3901		PD5136
	Q3904		2SA1048
	Q3901-Q3903		2SC2458
	D3909		AEL1152
	D3904-D3907, D3910, D3911		HSS104-02
	D3901, D3902		MTZJ15
	D3903		MTZJ3.0
	PC3901		U5C-08SC
SWITCHES			
	S3901-S3909, S3911		ASG1034
CAPACITORS			
	C3913		CCCSL121J50
	C3907, C3908		CCDSL221J50
	C3914		CEAS101M10
	C3911		CEAS2R2M50
	C3912		CEAS330M25
	C3906, C3916		CEAS470M25
	C3902, C3903		CEAS4R7M50
	C3909		CFTXA104J50
	C3915		CKCYB472K50
	C3905, C3910		CKCYF473Z50
RESISTORS			
	R3934		RD1/2PM561J
	R3931		RD1/2PMFL820J
	VR3901 (47kΩ)		ACP1045
	Other Resistors		RD1/4PU□□□J
OTHERS			
	CN3903 PIN JACK(1P)		AKB1062
	CN3902 PIN JACK(1P)		AKB1063
	CN3904 PIN JACK(1P)		AKB1064
	CN3901 SOCKET		AKP1081
	DPO HOLDER		AMR2294
	X3901 CERAMIC OSCILLATOR		ASS1043
	X3902 REMOTE RECEIVER UNIT		AXX1023
	CN3905 PLUG 10-P		KM250MA10
	CN3906 PLUG 6-P		KM250MA6B
AV2 ASSY			
COILS			
	L2101, L2103		LAU010J
	L2102, L2104		LAU560K
CAPACITORS			
	C2103, C2105		CEAS4R7M50
	C2101, C2104, C2106		CKCYB222K50
	C2102		CKCYF103Z50
RESISTORS			
	All Resistors		RD1/4PU□□□J
OTHERS			
	CN2101 CONNECTOR		AKP1003

Mark	No.	Description	Part No.
S TERMINAL ASSY			
CAPACITORS			
	C2131, C2133		CEAS220M50
	C2132, C2134		CKCYF103Z50
RESISTORS			
	All Resistors		RD1/4PU□□□J
OTHERS			
	CN2131	SOCKET	AKP1064
AUDIO ASSY			
SEMICONDUCTORS			
	IC3702		LA4280-P
	IC3703		NJM4558DXP
	IC3701		UPC1853CT-01
	Q3701, Q3702, Q3707		2SA1048
	Q3703, Q3704, Q3706, Q3708-Q3713		2SC2458
	Q3705		2SD1276A
	D3730		AEL1099
	D3702-D3711, D3713, D3715-D3718		HSS104-02
	D3720-D3729, D3731		HSS104-02
	D3712, D3714		MTZJ6.8
	D3701, D3719		RD5.6ESB3
	D3732		RD8.2ESB
COILS			
	L3701, L3702		ATH1009
	L3705, L3706		LAU560J
SWITCH			
	S3701		ASH1001
CAPACITORS			
	C3759, C3760		ACH1284
	C3729, C3736		CCCCH151J50
	C3714		CEAS010M50
	C3703, C3734, C3752, C3753		CEAS100M50
	C3730, C3733		CEAS101M10
	C3732		CEAS101M25
	C3716		CEAS220M50
	C3745		CEAS221M10
	C3743, C3744		CEAS222M35
	C3710, C3713, C3725, C3726		CEAS2R2M50
	C3746, C3747		CEAS2R2M50
	C3721, C3723		CEAS3R3M50
	C3754		CEAS470M25
	C3704, C3758		CEAS471M50
	C3731		CEHAQ100M50
	C3728		CEHAQ470M25
	C3741, C3742		CFTXA124J50
	C3735, C3740		CKCYB102K50
	C3722, C3724		CKCYB152K50
	C3756, C3757		CKCYB222K50
	C3701		CKCYB561K50
	C3702, C3711		CKCYF103Z50
	C3727, C3737-C3739, C3755		CKCYF473Z50
	C3715		CQMA102J50
	C3706		CQMA104J50
	C3707		CQMA222J50
	C3709, C3712		CQMA223J50
	C3708		CQMA681J50
	C3717, C3719		CQMA682J50
	C3705, C3718, C3720		CQMA823J50
RESISTORS			
	R3739, R3741		RD1/2PM152J
	R3701		RD1/2PM271J
	R3734, R3735		RD1/4PMFL100J
	R3770		RD1/4PMFL220J
	R3730, R3732		RD1/4PMFL2R2J
	OtherResistors		RD1/4PU□□□J
OTHERS			
	PIN JACK(2P)		AKB1233
	SPEAKER TERMINAL 4-P		AKE1009
	PLATE SPRING		ANG1569
	HEAT SINK		ANH1150
	SCREW		BBZ30P080FCU
	SCREW		BBZ30P080FMC
	CN3703	PLUG 8-P	KM250MA8
	CN3701	4-P PLUG	KM250NA4L
	CN3702	7-P PLUG	KM250NA7L
R CRT DRIVE ASSY			
SEMICONDUCTORS			
	Q2701		2SC4001
	D2701		HSS104-02
COILS			
	SG2701, SG2702		AEX-019
	L2703		LAU101K
	L2701, L2702		LAU470K
CAPACITORS			
	C2704 (1000PF, 2kV)		ACG1001
	C2703		ACH-378
	C2701		CEAS101M10
	C2702		CKCYB681K50
RESISTORS			
	R2705		ACN-225
	R2702		ACN1006
⚠	R2703, R2704		RS3LMF332J
	Other Resistors		RD1/4PU□□□J
OTHERS			
	CRT SOCKET		AKG1004
	HEAT SINK M3		ANH1409
	CN2702	PLUG 3-P	KM250MA3R
	SCREW		PMB30P100FMC

Mark	No.	Description	Part No.

G CRT DRIVE ASSY

SEMICONDUCTORS

	Q2801	2SC4001
	D2801	HSS104-02

COILS

	SG2801, SG2802	AEX-019
	L2803	LAU101K
	L2801, L2802	LAU470K

CAPACITORS

	C2804(1000PF, 2kV)	ACG1001
	C2803	ACH-378
	C2801	CEAS101M10
	C2802	CKCYB681K50

RESISTORS

	R2805	ACN-225
	R2802	ACN1006
⚠	R2803, R2804	RS3LMF332J
	OtherResistors	RD1/4PU□□□J

OTHERS

	J2, J3 4P LEAD WITH HOUSING	ADX2175
	CRT SOCKET	AKG1004
	HEAT SINK M3	ANH1409
	CN2802 PLUG 3-P	KM250MA3
	SCREW	PMB30P100FMC

B CRT DRIVE ASSY

SEMICONDUCTORS

	Q2901	2SC4001
	D2901	HSS104-02

COILS

	SG2901, SG2902	AEX-019
	L2903	LAU101K
	L2901, L2902	LAU470K

CAPACITORS

	C2904 (1000PF, 2kV)	ACG1001
	C2903	ACH-378
	C2901	CEAS101M10
	C2902	CKCYB681K50

RESISTORS

	R2905	ACN-225
	R2902	ACN1006
⚠	R2903, R2904	RS3LMF332J
	OtherResistors	RD1/4PU□□□J

OTHERS

	CRT SOCKET	AKG1004
	HEAT SINK M3	ANH1409
	CN2902 PLUG 3-P	KM250MA3B
	CN2903 PLUG 5-P	KM250MA5
	SCREW	PMB30P100FMC

Mark	No.	Description	Part No.

AC IN ASSY

COILS

⚠	L901, L902	ATF1158

CAPACITORS

⚠	C901, C902 (0.22μF, 250V)	ACE1107

RESISTORS

⚠	R901 (2.2MΩ, 1/2W)	ACN-208

OTHERS

	CN902-CN904 PLUG 2-P	AKM1127
	CN901 PLUG 3-P	AKM1128
	H901, H902	AKR1003

Y/C ASSY

SEMICONDUCTORS

	IC4502	MC14052BCP
	IC4501	MC14053BCP
	Q4504, Q4506, Q4570, Q4571	2SA1048
	Q4575-Q4577	2SA1048
	Q4502, Q4503, Q4505, Q4508-Q4511	2SC2458
	Q4573, Q4574, Q4578	2SC2458
	Q4512-Q4515	DTC124ES
	Q4572	RN1201
	D4501, D4502, D4507-D4510	HSS104-02
	D4571	MTZJ13
	D4505, D4506	MTZJ15

COILS

	L4501	ATG1008
	L4512	LAU1R8J
	L4503	LAU270J
	L4508, L4511, L4513	LAU3R9J
	L4502, L4504, L4505, L4510	LAU470J
	L4507, L4509	LAU8R2J

CAPACITORS

	C4510, C4511	CCCCH151J50
	C4509, C4516	CCCCH181J50
	C4503	CCCCH220J50
	C4517, C4518	CCCCH221J50
	C4505	CCCCH270J50
	C4504	CCCCH560J50
	C4576	CEANP2R2M50
	C4572	CEANP3R3M50
	C4573	CEAS010M50
	C4574	CEAS100M50
	C4570, C4575	CEAS2R2M50
	C4506, C4520, C4529, C4531, C4533	CEAS470M25
	C4501, C4502, C4507, C4508, C4512	CKCYF103Z50
	C4514, C4515, C4519, C4522	CKCYF103Z50
	C4525-C4527, C4532, C4571, C4577	CKCYF103Z50

RESISTORS

	All Resistors	RD1/4PU□□□J

OTHERS

	CABLE HOLDER	AKT1012

Mark	No.	Description	Part No.
D CONNECTOR ASSY			
OTHERS			
		CABLE HOLDER	AKT1012
	CN4953	15P SOCKET	KP200IA15L
	CN4954	5P SOCKET	KP200IA5L
POWER DOWN ASSY			
SEMICONDUCTORS			
	Q271, Q371		2SA1145
	D273, D373		AEL1099
	D271, D272, D371, D372		HSS104-02
CAPACITORS			
	C271, C371		CEANP220M35
RESISTORS			
	AllResistors		RD1/4PU□□□J
OTHERS			
	CN371	5P SOCKET	KP200IA5L
RELAY DRIVE ASSY			
SEMICONDUCTORS			
	Q101		2SA1048
	Q102, Q103, Q114, Q180		2SC2458
	D107, D108, D137, D142, D183		HSS104-02
	D188		HSS104-02
CAPACITORS			
	C112		CEAS100M50
	C107, C115, C183		CEAS470M25
RESISTORS			
	AllResistors		RD1/4PU□□□J
OTHERS			
	CN106	8P SOCKET	KP200IA8L
POWER SUPPLY ASSY			
SEMICONDUCTORS			
	IC201, IC301		NJM4558DXP
⚠	IC101, IC102		ON3171
×	Q301, Q302		
	Q107, Q111, Q201		2SA1048
	Q204, Q206, Q305, Q306		2SA1145
	Q108, Q113, Q209, Q310		2SC2458
×	Q303		
×	Q304		
	Q109, Q203		2SC2705
	Q202		2SC3327
⚠	Q205, Q307		2SC3332
	Q210		2SC4256(E)
⚠	Q110, Q112, Q207		2SD1276A
⚠	Q308		2SD1276A
	Q105, Q106		2SD1835
⚠	Q208, Q309		2SD2300(D)
⚠	Q104		2SK1168(A)
⚠	D213, D306		11DF2FD
	D101, D102, D104, D105, D148		1SS145
	D145, D222, D313		AEL1099
	D106		D5SBA60(B)
	D214, D217		ES1F
⚠	D307		ES1F
	D127, D129, D130		FMP-G12S
	D116-D123, D125, D126		HSS104-02
	D139-D141, D182, D186, D187		HSS104-02
	D203-D212, D218, D219		HSS104-02
⚠	D303		HSS104-02
	D304, D305, D312, D318, D319		HSS104-02
	D135		HZS18-1L
	D115, D138, D180, D181		HZS18L
	D103, D134, D136		HZS6B1L
	D124		HZS6C2L
	D215, D216, D309, D310		RD12ESB
	D316, D317		RD12ESB
	D201		RD39ESB4
	D301		RD5.1ESB
×	D302		
	D202		RD5.1ESB2
	D133		RD5.1ESB3
	D128		RL2Z
	D185		RL4Z(A)
×	D308		
	D132		RU4A(A)
	D131		S5688G
COILS			
⚠	L101, L102		ATF1158
	L119-L123		ATH-059
	L103		ATH-133
	L124		ATH1046
	L201		ATL1053
	L112, L118		ATX1021
	L104-L111, L114-L117		ATX1023
	L202, L203		LTA152J
	L301		LTA272J
TRANSFORMERS			
⚠	T102		ATK1104
⚠	T101		ATT1273
⚠	T201		ATK1045
⚠	T301		ATK1045
⚠×	T302		
RELAYS			
⚠	RY101, RY102		ASR1036
CAPACITORS			
⚠	C101, C102 (0.22μF, 250V)		ACE1107
⚠	C132 (100pF, 2kV)		ACG-032
	C139, C143		ACG-045
⚠	C110, C111, C113, C114 (0.01μF, 250V)		ACG-501
⚠	C222 (1000pF, 2kV)		ACG1001
⚠	C122 (3300pF, 2kV)		ACG1008
⚠	C323 (680pF, 2kV)		ACG1024
⚠	C119 (4700pF, 2kV)		ACG1028
	C152, C219, C220 (4700pF, 2kV)		ACG1028
⚠	C105, C106, C108, C109 (4700pF, 250V)		ACG7009

Mark	No.	Description	Part No.
	C120		ACH-378
⚠	C228	(10μF, 160V)	ACH1117
	C319	(10μF, 160V)	ACH1117
	C135		ACH1146
	C116, C118		ACH1164
	C312, C317		CCCSL101J50
	C214, C218, C314		CCCSL101K500
	C129, C130, C156, C157, C181		CCCSL221K500
	C117		CCDSL101J50
	C330		CCDSL101K500
	C229		CEANP4R7M100
	C215		CEAS010M100
	C127, C202, C205		CEAS010M50
	C304, C321		CEAS100M50
	C207		CEAS221M16
	C153		CEAS470M25
	C328, C329		CEAS4R7M50
	C148, C217, C306		CEHAQ010M50
	C211, C310		CEHAQ100M2C
	C145, C146, C149, C203, C204		CEHAQ100M50
	C327		CEHAQ100M50
	C305		CEHAQ101M10
	C103		CEHAQ102M25
	C313		CEHAQ220M16
	C325		CEHAQ220M25
	C322		CEHAQ220M2C
	C309		CEHAQ221M10
	C150, C302		CEHAQ221M16
	C138		CEHAQ222M16
	C134		CEHAQ222M35
	C182		CEHAQ222M50
	C213		CEHAQ330M16
	C142		CEHAQ331M35
	C128, C184		CEHAQ332M16
	C133, C137		CEHAQ332M35
	C318		CEHAQ4R7M50
⚠	C324		CFPHW123H3D
	C225		CFPHW153H3D
⚠	C226		CFPMW155J2D
	C221		CFTYA474J50
	C320		CKCYB102K50
	C216		CKCYB102K500
	C301		CKCYB222K50
	C210		CKCYB331K500
	C316		CKCYB392K500
	C308		CKCYB561K50
	C147		CKCYB681K50
	C104, C212, C307, C311		CKCYF103Z50
	C315		CKCYF222Z500
	C140, C141, C144, C151, C201		CKCYF473Z50
	C303, C326		CKCYF473Z50
	C126		CQMA102J50
	C125, C209, C227		CQMA103J50
	C206		CQMA223J50
	C208		CQMA471J50
	C121		CQMA473J50
⚠	C224		CQPA683J200

Mark	No.	Description	Part No.
RESISTORS			
⚠	R349		ACN-225
	R247		ACN1011
⚠	R145, R158, R159	(1Ω, 5W)	ACN1032
	R329, R346		RD1/2PM122J
	R328		RD1/2PM152J
	R169		RD1/2PM220J
×	R327		
	R321		RD1/2PM821J
⚠	R126		RD1/2PMFL103J
	R240		RD1/2PMFL103J
	R257		RD1/2PMFL220J
⚠	R252		RD1/2PMFL223J
⚠	R123, R166, R170		RD1/2PMFL470J
	R187, R234		RD1/2PMFL470J
	R336		RD1/2PMFL472J
⚠	R235		RD1/2PMFL473J
	R337		RD1/2PMFL563J
×	R307		
⚠×	R344		
	R232		RD1/4PMFL392J
⚠	R204		RD1/4PMFL3R9J
	R218, R253		RD1/4PMFL3R9J
⚠	R302, R314		RD1/4PMFL3R9J
⚠	R222, R320		RD1/4PMFL470J
	R236, R338		RD1/4PMFL471J
⚠	R348		RN1/2PC3902F
⚠	R347		RN1/2PC4302F
	R340		RN1/2PC7502F
	R121		RN1/4PC1001F
	R134, R136		RN1/4PC1603F
	R156		RN1/4PC2101F
	R157		RN1/4PC2431F
	R133		RN1/4PC3601F
	R122		RN1/4PC8200F
	R239		RS1LMF010J
	R180		RS1LMF272J
	R118		RS1LMF473J
⚠	R326		RS1LMF561J
	R229, R258		RS1LMF822J
⚠	R351		RS1LMFR22J
	R141		RS2LMF223J
⚠	R230		RS3LMF010J
⚠	R241, R245		RS3LMF104J
	R242		RS3LMF104J
⚠	R343		RS3LMF151J
	R209		RS3LMF153J
⚠	R358		RS3LMF822J
	R119, R120		RS3LMFR22J
	R188		RS3LMFR47J
⚠	R341		RS3LMFR47J
⚠	R331		RS3LMFR68J
⚠	R128, R129		RT10PZ150K
×	R306		
×	R308		
×	R311		

Mark	No.	Description	Part No.
×	R312		
×	R316		
⚠×	R317		
⚠×	R318		
×	R319		
	VR201 (470Ω)		ACP1039
	VR101, VR301		VRTS6VS102
×	VR301		
	VR302		VRTS6VS223
	Other Resistors		RD1/4PU□□□J

OTHERS

	SCREW	ABA-234
	RIVET	AEC-441
	MICA SHEET	AEP-056
	CN202 PLUG 3-P	AKM1055
	CN203-CN205 PLUG 6-P	AKM1072
	CN101 PLUG 3-P	AKM1128
	H103, H104, H109-H114	AKR1003
	HEAT SINK M	ANH-697
	HEAT SINK	ANH-880
	HEAT SINK B	ANH1021
	SHIELD CASE	ANH1165
	HEAT SINK	ANH1371
	SCREW	BBZ30P080FCU
	SCREW	BBZ30P080FZK
	CN201 PLUG 10-P	KM200IA10
	CN103 11P PLUG	KM200IA11
	CN302 5P PLUG	KM200IA5
	CN105 8P PLUG	KM200IA8
	CN301 PLUG 5-P	KM250MA5
	CN104 PLUG 9-P	KM250MA9
	SCREW	PBZ30P080FMC
	SCREW	VPZ40P100FMC

Mark	No.	Description	Part No.

DIGITAL ASSY

SEMICONDUCTORS

	IC4301	CXA1686M
	IC4302	CXD2024AQ
	IC4008	HG62G010R29FB
	IC4005	TA8667F
	IC4006, IC4007	TC35071F
	IC4001	TC74HC4066AF
	IC4009	TC9078F
	Q4005, Q4008, Q4015, Q4018-Q4020	2SA1162
	Q4025, Q4029-Q4032, Q4308, Q4309	2SA1162
	Q4314	2SA1162
	Q4001-Q4004, Q4006, Q4007	2SC2712
	Q4009-Q4014, Q4017, Q4021-Q4024	2SC2712
	Q4027, Q4028, Q4033-Q4036	2SC2712
	Q4301-Q4306, Q4310-Q4313	2SC2712
	Q4315-Q4317	2SC2712
	Q4026	2SK208
	D4001-D4003	1SS352

COILS AND FILTERS

	L4004	ATC1037
	F4021-F4023, F4025, F4301, F4302	ATF1124
	F4304, F4305	ATF1124
	F4003-F4012, F4016-F4019, F4024	ATF1128
	F4027, F4029-F4033	ATF1128
	F4001, F4002, F4013-F4015, F4026	ATF1129
	F4034, F4306-F4308	ATF1129
	F4309-F4311	ATF1178
	L4302	LCTA100J3225
	L4001, L4002, L4007, L4008	LCTA101J3225
	L4301	LCTA151J3225
	L4005	LCTA1R8J3225
	L4303-L4305	LCTA220J3225
	L4003, L4006	LCTA4R7J3225

CAPACITORS

	C4338	CCSQCH090D50
	C4315, C4332, C4353	CCSQCH100D50
	C4033	CCSQCH101J50
	C4078, C4082	CCSQCH102J50
	C4339	CCSQCH120J50
	C4003-C4006, C4017, C4019	CCSQCH121J50
	C4053, C4054, C4057, C4060	CCSQCH121J50
	C4354-C4356	CCSQCH180J50
	C4043	CCSQCH181J50
	C4045, C4079, C4080, C4083	CCSQCH221J50
	C4326	CCSQCH330J50
	C4046, C4049, C4313	CCSQCH390J50
	C4018	CCSQCH820J50
	C4322	CEAS221M10
	C4034, C4350	CEV010M50
	C4325	CEV100M16
	C4020	CEV100M50
	C4002, C4010, C4040, C4047, C4055	CEV101M6
	C4062, C4067, C4071, C4075, C4301	CEV101M6
	C4310, C4327, C4331, C4345	CEV101M6

Mark	No.	Description	Part No.
	C4012, C4016, C4031		CEV220M16
	C4015, C4026, C4028, C4038, C4044		CEV470M16
	C4303, C4305, C4321, C4335, C4347		CEV470M16
	C4351, C4352		CEV470M16
	C4007, C4008		CEV4R7M50
	C4343		CEVR22M50
	C4330		CKCYF223Z50
	C4333		CKSQYB473K50
	C4024		CKSQYB822K50
	C4336, C4340		CKSQYF102Z50
	C4304, C4309, C4317, C4337, C4342		CKSQYF103Z50
	C4346, C4348, C4349		CKSQYF103Z50
	C4001, C4009, C4011, C4013, C4014		CKSQYF104Z50
	C4021-C4023, C4025, C4027		CKSQYF104Z50
	C4029, C4030, C4032, C4035-C4037		CKSQYF104Z50
	C4039, C4041, C4042, C4048		CKSQYF104Z50
	C4050-C4052, C4056, C4058, C4059		CKSQYF104Z50
	C4061, C4063-C4066, C4068-C4070		CKSQYF104Z50
	C4072-C4074, C4076, C4077, C4081		CKSQYF104Z50
	C4302, C4306-C4308, C4311, C4312		CKSQYF104Z50
	C4314, C4316, C4318-C4320		CKSQYF104Z50
	C4323, C4324, C4328, C4329, C4334		CKSQYF104Z50
	C4344		CKSQYF104Z50
	C4341		CKSQYF472Z50
RESISTORS			
	All Resistors		RS1/10S□□□J
OTHERS			
	CN4001 PLUG 50-P		AKM1126
	DIGITAL ASSY		ANP1826
	X4302 CRYSTAL RESONATOR		ASS1056
	X4301 CERAMIC RESONATOR		ASS1098
	X4303 CRYSTAL RESONATOR (17.734475MHz)		ASS1123
	SCREW		BBZ30P080FZK

7. ADJUSTMENTS

- Adjustment items are described as follows.

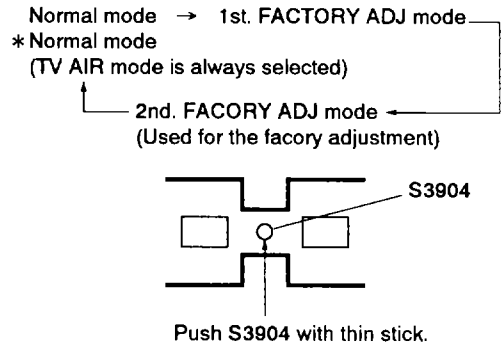
7.1 FACTORY ADJ MODE
7.2 WHEN POWER SUPPLY ASSY WAS REPAIRED
7.3 WHEN POWER SUPPLY ASSY WAS REPLACED
7.4 WHEN VIDEO•UCOM ASSY WAS REPAIRED OR REPLACED
7.5 WHEN TUNER ASSY WAS REPAIRED
7.6 WHEN TUNER ASSY WAS REPLACED
7.7 WHEN CONVERGENCE ASSY WAS REPAIRED OR REPLACED
7.8 WHEN R, G OR B CRT DRIVE ASSY WAS REPAIRED OR REPLACED
7.9 WHEN FRONT CONTROL ASSY WAS REPAIRED
7.10 WHEN FRONT CONTROL ASSY WAS REPLACED
7.11 WHEN DIGITAL ASSY WAS REPAIRED OR REPLACED
7.12 WHEN CRT ASSY R, G OR B WAS REPLACED
7.13 WHEN LENS ASSY WAS REPLACED
7.14 WHEN OTHER ASSEMBLIES WERE REPAIRED OR REPLACED
7.5 ANODE VOLTAGE MEASURING METHOD

- When replacing the assemblies, be sure to use an Assy which works completely.
- Characters in parentheses ( ) beside an adjustment point are an abbreviation of the Assy containing that adjustment point.
  C : CONVERGENCE Assy
  D : DIGITAL Assy
  F : FRONT CONTROL Assy
  P : POWER SUPPLY Assy
  T : TUNER Assy
  V : VIDEO•UCOM Assy
  VR1: Focus variable resistor (VR1)
- The adjustment points and test points are shown in Fig. 7-21 and Fig. 7-22 for each Assy.
- A test signal should be input to the AV-3 terminal on the front panel unless otherwise noted.
- Set the AV MEMORY mode to standard unless otherwise noted.

7.1 FACTORY ADJ Mode

1. Entering FACTORY ADJ mode

The FACTORY ADJ mode of this unit is divided into the 1st. FACTORY ADJ mode for performing adjustments and 2nd. FACTORY ADJ mode used in the manufacturing process of the factory.
Each time the S3904 switch is pressed through the small hole at the center of the front panel with a thin stick, the mode will change cyclically as follows.


Normal mode → 1st. FACTORY ADJ mode
*Normal mode
(TV AIR mode is always selected)
2nd. FACORY ADJ mode
(Used for the facory adjustment)
S3904
Push S3904 with thin stick.

2. Operating 1st. FACTORY ADJ Mode

When the unit enters 1st. FACTORY ADJ mode, ADJUSTMENT RANGE mode is first obtained. (when the unit enters 2nd. FACTORY ADJ mode, "– –" appears on the right lower section of the screen.)
By pressing the following keys, the ADJUSTMENT mode can be switched directly.

- [MENU] key : ADJUSTMENT RANGE mode
- [▼] key : ADJUSTMENT OFFSET mode
- [MENU], [⊠], [⊠] keys: ADJUSTMENT GAME mode
- [■] key : ADJUSTMENT IF mode
- [☰] key : ADJUSTMENT MPX mode
- [SET] key : ADJUSTMENT CONVERGENCE mode
- [☰▶] key : ADJUSTMENT NTSC OFFSET mode
- [◀] key : not used (ADJ AUTO CONVER mode)

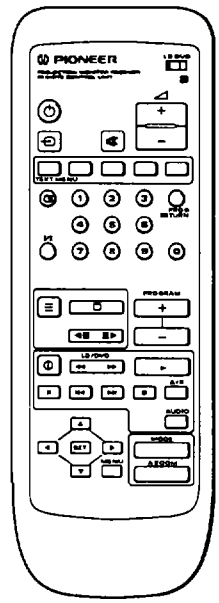


Fig. 7-1 Key indication on the remote control unit

① ADJUSTMENT RANGE mode

This mode is to check how much the picture and sound quality change.

- Function

In this mode, adjustment functions are assigned to the numeric keys [1] through [0] of the remote control unit, as shown in Fig. 7-2. Each numeric key corresponds to a particular adjustment function. Press the numeric key corresponding to the desired function and the selected function name will be displayed. To change the set value, Press the same key repeatedly and the set value will change from CNT to MIN and MAX cyclically. When the following adjustments are selected, the meaning of the set values change as follows :

- [2]: TINT
  CNT : Center
  ↓
  MIN : Blue
  ↓
  MAX : Red
- [3]: BALANCE
  CNT : Sound output from both channels
  ↓
  MIN : Sound output from Left channel
  ↓
  MAX : Sound output from Right channel
- [9]: Surround mode
  OFF
  ↓
  THEATER
  ↓
  STADIUM
  ↓
  S. STEREO

By pressing the numeric keys [7], [8] and [0], the VOLUME can be set to the following values.

[7] key : VOL20
[8] key : VOL30
[0] key : VOL0

If the VOLUME set to the other values, release FACTORY ADJ mode, then enter the 1st. FACTORY ADJ mode after the volume adjustment is completed in the normal screen.

② ADJUSTMENT OFFSET mode

This mode is to set the standard picture quality (AV MEMORY) for a normal picture.

- Function

To adjustment picture quality, press one of the keys [1] through [5], and an item to be adjusted such as COLOR, TINT, CONTR, BRITE, SHARP, assigned to the pressed button is selected and will appear on the screen, as shown in Fig. 7-2. To change the set value, press the ◿ (VOLUME)[+], [-] keys until the desired value appears on the screen.

The picture quality set in this mode is the standard picture quality which appears by selecting the AV MEMORY mode with a normal picture.

- How to enter the AV MEMORY mode
  Press keys on the remote control unit.
  [MENU] ➡ [▼] (Select AV MEMORY) ➡ [SET]

③ ADJUSTMENT GAME mode

This mode is to set the SOFT BRITE (GAME) in the menu of AV MEMORY.

Perform the setting by referring to the setted picture quality in the ADJUSTMENT OFFSET mode.

Normally, set to the following values.

CONTR : − 45 , BRITE : +18
SHARP : − 18 , Others : 0

- Function

The method of adjustment is the same as that of ② ADJUSTMENT OFFSET mode except for the set values.

④ ADJUSTMENT IF mode

This mode is to adjust IF of tuner section.

- Function

select the adjustment items by pressing [1] or [2] key of the remote control unit.

Set the desired set value by pressing the ◿ (VOLUME)[+] or [-] key.

⑤ ADJUSTMENT MPX mode

This mode is to adjust the TV tuner MPX decoder section.

- Function

Select the adjustment items by pressing [1] through [7] keys of the remote control unit.

Set the desired set value by pressing the ◿ (VOLUME)[+] or [-] key.

⑥ ADJUSTMENT CONVERGENCE mode

This mode is for setting convergence.

For details, see section "7.7.2 CONVERGENCE ADJUSTMENT".

⑦ ADJUSTMENT NTSC OFFSET mode

This mode is for the convergence correction mode when NTSC signal is input.

Adjustment items are RH LIN and BH LIN for each screen size.

Normally, set to the following values.

RH : 5 , BH : − 5

If NTSC signal is input, this NTSC OFFSET value is always added to the adjustment value of convergence in spite of ON/OFF of the FACTORY ADJ mode.

If red or blue lines are shifted against to green line, perform the adjustment.

- Function

Select the adjustment items RH and BH by pressing the PROGRAM [+] and [-] keys of the remote control unit.

Set the desired set value by pressing the ◿ (VOLUME)[+] or [-] key.

⑧ ADJUSTMENT AUTO CONVER mode

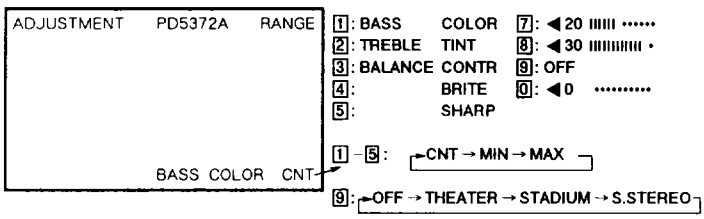
This mode is used in the factory.

If this mode is entered, point convergence value will be initialized to 0 in the all screen modes.

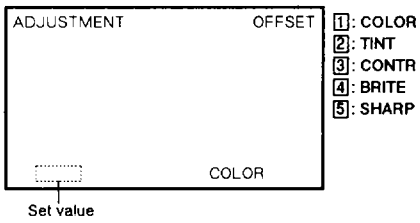
Enter the 1st. FACTORY ADJ mode by pressing S3904

• Press numeric keys on the remote control unit.

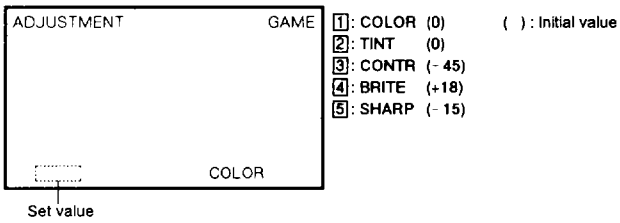
① Press [MENU] key
Mode for checking the change of picture quality, sound quality, etc.
(Telop : Red)


ADJUSTMENT PD5372A RANGE
BASS COLOR CNT
1: BASS COLOR 7: ◀20
2: TREBLE TINT 8: ◀30
3: BALANCE CONTR 9: OFF
4: BRITE 0: ◀0
5: SHARP
1 - 5: CNT → MIN → MAX
9: OFF → THEATER → STADIUM → S.STEREO

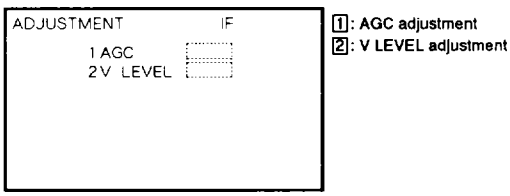
② Press [▼] key
Mode for setting Pioneer's standard
(Telop : Blue)



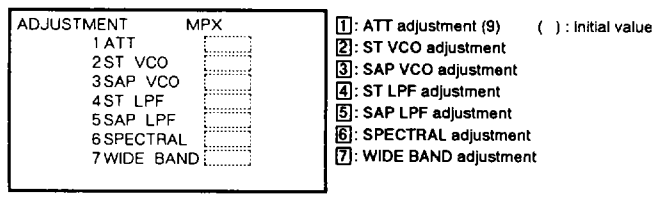
③ Press [MENU], [▣], [▣] keys
Mode for setting SOFT BRITE
(Telop : Yellow)



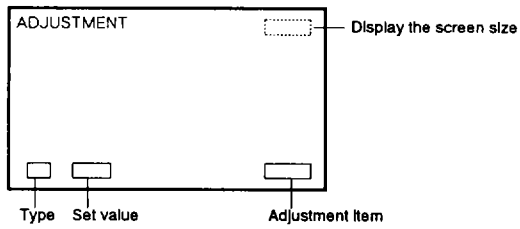
④ Press [■] key
IF adjustment mode
(Telop : Cyan, Selectrion : Red)



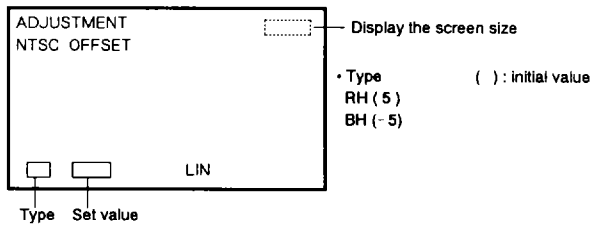
⑤ Press [☰] key
MPX adjustment mode
(Telop : Cyan, Selectrion : Red)



⑥ Press [SET] key
Mode for setting convergence
(Telop : White)



⑦ Press [⇒] key
Mode for setting convergence at NTSC signal



⑧ Press [▲] key
AUTO CONVER mode
(Telop : White)

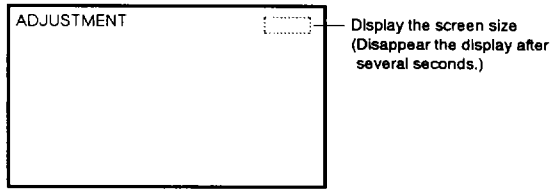


Fig.7-2 Screen display of FACTORY ADJ mode

7.2 WHEN POWER SUPPLY ASSY WAS REPAIRED

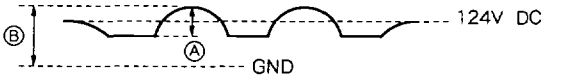
Note : VR301 and VR302 are protected by the shield covers (ANH1166) so that they can not be adjusted. Do not try to turn these volumes by removing their shield cover. (Otherwise, the sensitivity of the protection circuit against the X-ray and the anode voltage will be affected.)

- Adjustment test points (TP) are located in the POWER SUPPLY assy.

7.2.1 Power Supply Section

Step No.	Adjustment Item	Input Signal	Adjustment Point	Adjustment Procedure
1	135V power supply adjustment	Monoscope signal	VR101(P)	Adjust so that the voltage of TP102 (135V) becomes 135V ± 0.5V.

7.2.2 Deflection Section

Step No.	Adjustment Item	Input Signal	Adjustment Point	Adjustment Procedure
1	Focus adjustment	Cross hatch signal	Focus VR (VR1)	• Turn the focus VR for best focusing. • Repeat adjustments for the lens assy and focus VR.
2	Horizontal output level adjustment	Monoscope signal or general broadcasting	VR201(P)	• Set the screen size to full mode. • Observe the cathode of D213 on the POWER SUPPLY assy with an oscilloscope. Adjust VR201 so that the cathode voltage becomes 124V DC, as calculated by equation ①.  Reference : The DC voltage level of the V parabolic wave is equal to two-fifths of waveform Ⓐ Vp-p. Therefore, the voltage is obtained at the waveform's peak value Ⓑ V peak as follows: Equation ①.....(Ⓑ − 2/5Ⓐ) = 124V DC Note : When adjusting VR201, VR602 on the CONVERGENCE assy should have been positioned at the midpoint.
3	Horizontal size coarse adjustment	Adjust as described in step 1 in section 7.7.1.		
4	Vertical size coarse adjustment	Adjust as described in step 3 in section 7.7.1.		
5	Convergence adjustment	Cross hatch signal	Adjustment using the remote control unit	• Adjust so that the green cross hatch display normally appears on the screen with only the green CRT drive activated. • Adjust the red line so that it aligns with the green line on the cross hatch screen with the green and CRT drives activated. • Adjust the blue line so that it aligns with the green line on the cross hatch screen with the green and CRT drives activated. Note : For details on the convergence adjustment, see section 7.7.2.
6	White balance adjustment	Adjust as described in step 3 in section 7.4.1.		

7.3 WHEN POWER SUPPLY ASSY WAS REPLACED

Note : As VR301 and VR302 in the POWER SUPPLY assy supplied as a spare part are protected by the shield cover (ANH1166).
Never take off the shield cover (ANH1166).

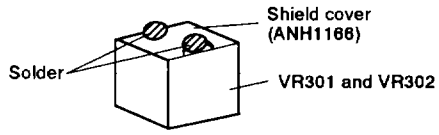


Fig. 7 - 3 Shield cover

7.3.1 Power Supply Section

- No adjustment required.

7.3.2 Deflection Section

- Adjust focus, horizontal size and white balance as described in section 7.2.2.

7.4 WHEN VIDEO•UCOM ASSY WAS REPAIRED OR REPLACED

- Adjustment test points (TP) are located in the VIDEO •UCOM assy unless otherwise specified.

Note 1 : When replacing the VIDEO•UCOM assy due to reasons other than a defective memory, remove the non-volatile memory IC3303 (AT24C16-10PC) from the old assy and install it in the new assy.
The convergence data adjusted at the factory is stored in this memory.

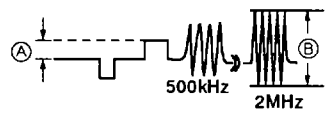
Note 2 : Reset the user settings such as the convergence POSITION adjustment, channel presetting of the tuner, etc.

7.4.1. Adjustment Procedure

- Steps 5 and 6 are separately described in other tables. See sections 7.4.2 and 7.4.3.

Step No.	Adjustment Item		Input Signal	Adjustment Point	Adjustment Procedure
1	Contrast coarse adjustment		——	CONTR (*2)	Note : Perform this adjustment only when a data memory IC (IC3303 : AT24C16 - 10PC) on the VIDEO•UCOM assy was replaced or when the contrast of ADJUSTMENT OFFSET mode in FACTORY ADJ mode is extremely shifted. ● Activate ADJUSTMENT OFFSET mode in FACTORY ADJ mode. (Telop : Blue) ● Press the [3] key on the remote control unit to select CONTR. ● Press the ◿ (VOLUME) [+] or [−] key so that the telop shows about 0.
2	Pioneer's standard settings	Brightness adjustment	Black burst signal	BRITE (*2)	● Adjust the cut off level at TP - GK on the G CRT DRIVE assy to 190V DC. ● Select BRITE by pressing [4] key on the remote control unit in ADJUSTMENT OFFSET mode of FACTORY ADJ mode, and adjust by pressing the ◿(VOLUME) [+] or [−] key.
3	White balance adjustment		Color bar signal without color signal	Screen VR(VR1) VR1003(R) Drive VR1002(B) VR (V)	● Adjust the screen VRs (red or blue) so that the dark part of the screen becomes gray. Do not move the screen VR (green). ● Adjust the drive VRs (red or blue) so that the bright part of the screen becomes white.

*2 : Adjust by remote control unit

<table>
<tr><th>Step No.</th><th colspan="2">Adjustment Item</th><th>Input Signal</th><th>Adjustment Point</th><th>Adjustment Procedure</th></tr>
<tr><td>4</td><td colspan="2">Test cross
H-center position adjustment</td><td>Free video signal</td><td>TC3301 (V)</td><td>● Select the INITIAL SETUP CONVERGENCE in the user's menu.
● Select the screen size to full (4:3 normal) and press the SET key so that the test cross is appeared.
● Adjust the position so that the test cross is placed at the center of the screen.
● Press the SET key twice to select the ADJ OUTER POINT and press SET key again to point convergence screen.
● Confirm that the test cross position of point convergence keep the balance at the right and left. (Confirm that the test cross does not move the outside of screen.)</td></tr>
<tr><td>5</td><td colspan="2">PAL system adjustement</td><td colspan="3">Adjust the glass delay line for PAL demodulator as described in section 7.4.2.
(Adjust for PAL system only.)</td></tr>
<tr><td>6</td><td colspan="2">SECAM system adjustment</td><td colspan="3">Adjust the SECAM IDENT coil, detection coil and BELL FILTER as described in section 7.4.3.
(Adjust for SECAM system only.)</td></tr>
<tr><td>7</td><td rowspan="4">PIONEER Standard setting</td><td>Sharpness adjustment</td><td>Multi burst</td><td>SHARP (*2)</td><td>● Set to SHARP in ADJUSTMENT OFFSET mode of FACTORY ADJ mode, adjust by pressing the ◿(VOLUME) [+] or [−] key so that the ratio of Ⓐ (the level from black to white) to Ⓑ (peak-to-peak value of 2MHz) at TP1008 (GOUT) on the VIDEO•UCOM assy to Ⓐ : Ⓑ = 5 : 7
Ⓐ : Ⓑ = 5 : 7  </td></tr>
<tr><td>8</td><td>Color adjustment</td><td>Color bar</td><td>COLOR (*2)</td><td>Adjust screen to the optimum condition.</td></tr>
<tr><td>9 (*3)</td><td>Tint adjustment</td><td>NTSC color bar</td><td>TINT (*2)</td><td>Adjust screen to the optimum condition.</td></tr>
<tr><td rowspan="2">10</td><td rowspan="2">Contrast adjustment</td><td>Color bar</td><td>CONTR (*2)</td><td>Adjust screen to the optimum condition.</td></tr>
<tr><td>Normal video signal</td><td>——</td><td>At the TP-BK of B. CRT DRIVE assy, confirm that the signal is shaped as shown below.
 </td></tr>
<tr><td rowspan="2">11</td><td colspan="2" rowspan="2">Soft brightness setting</td><td colspan="3">● Set to ADJUSTMENT GAME (SOFT BRITE) mode of FACTORY ADJ mode (Telop : Yellow).</td></tr>
<tr><td>Normal color video signal (For setting the numeric value only, no signal is possible.)</td><td colspan="2">Set the telop value (set value) for each adjustment item, as shown below, using a remote control unit.
<table><tr><th>Adjustment Items</th><th>Telop (Set value)</th></tr><tr><td>SHARP</td><td>− 15</td></tr><tr><td>CONTR</td><td>− 45</td></tr><tr><td>BRITE</td><td>+ 18</td></tr><tr><td>Others</td><td>± 0</td></tr></table></td></tr>
</table>

*2: Adjust by remote control.
*3: Adjust for NTSC and NTSC 4.43 only.

7.4.2 PAL System Adjustment

- This adjustment is separated from the table in 7.4.1 as it is to be performed only for the PAL system.
- The adjustment requires the PAL DEMO pattern.
- If the adjustment is not correctly performed, colors change at each scanning line, and this can be judged only by using the PAL DEMO pattern.

Step No.	Adjustment item	Input signal	Adjustment point	Adjustment procedure
1 - 1	Adjustment of glass delay line for PAL demodulator.	PAL DEMO pattern	—	Set oscilloscope as follows : H=2mS/div ; V=100mV/div. Observe the waveforms at pin 60 (R - Y IN) and pin 62 (B - Y IN) of IC1003.
1 - 2			L1006 (V)	Adjust so that the waveform of the measuring area 1 in Fig. 7 - 5 (Fig. 7 - 6 a) appears as shown in Fig. 7 - 6 b.
1 - 3			VR1001 (V)	Adjust so that the waveform of the measuring area 2 in Fig. 7 - 5 appears as shown in Fig. 7 - 6 c.
1 - 4	Repeat steps 1 - 2 and 1 - 3 until the optimum picture is obtained. (Adjust so that the measuring area 1 is set below 50mVp - p, and the measuring area 2 is set below 180mVp - p.)			

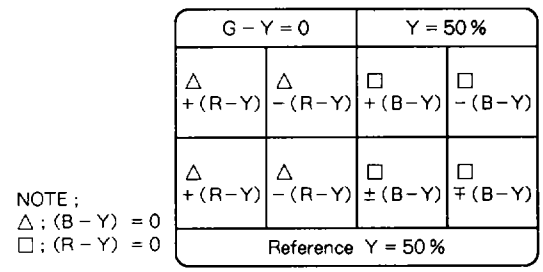


Fig. 7 - 4 PAL DEMO pattern

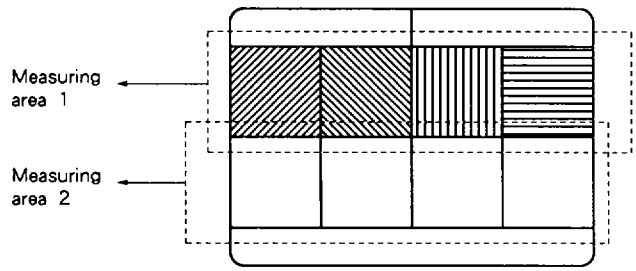


Fig. 7 - 5 Measuring area

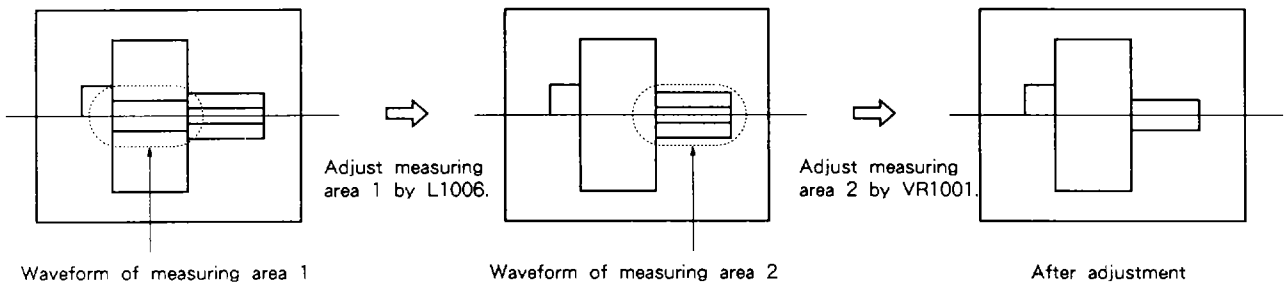


Fig. 7 - 6 Oscilloscope screen

7.4.3 SECAM System Adjustment

- This adjustment is separated as it is to be performed only for the SECAM system.

Step No.	Adjustment item	Input signal	Adjustment point	Adjustment procedure
2-1	SECAM identity adjustment	SECAM color bar	L1010(V)	Adjust so that the DC voltage at pin 23 of IC1003 is maximum.
2-2	Detection coil and Bell filter adjustment	Black signal (including SECAM color carrier)	L1008 (V): Pin 60(R-Y IN) L1001 (V): Pin 62(B-Y IN)	Adjust so that waveform appears as shown in Fig. 7-7 b at pin 60 (R-Y IN) and pin 62 (B-Y IN) of IC1003.
2-3			L1007 (V)	Adjust so that the waveform appears as shown in Fig. 7-7 c at pin 60 (R-Y IN) and pin 62 (B-Y IN) of IC1003.
2-4	Repeat steps 2-2 to2-3 until the optimum picture is obtained. Check to see that the color bars are displayed correctly on the screen after adjustment.			

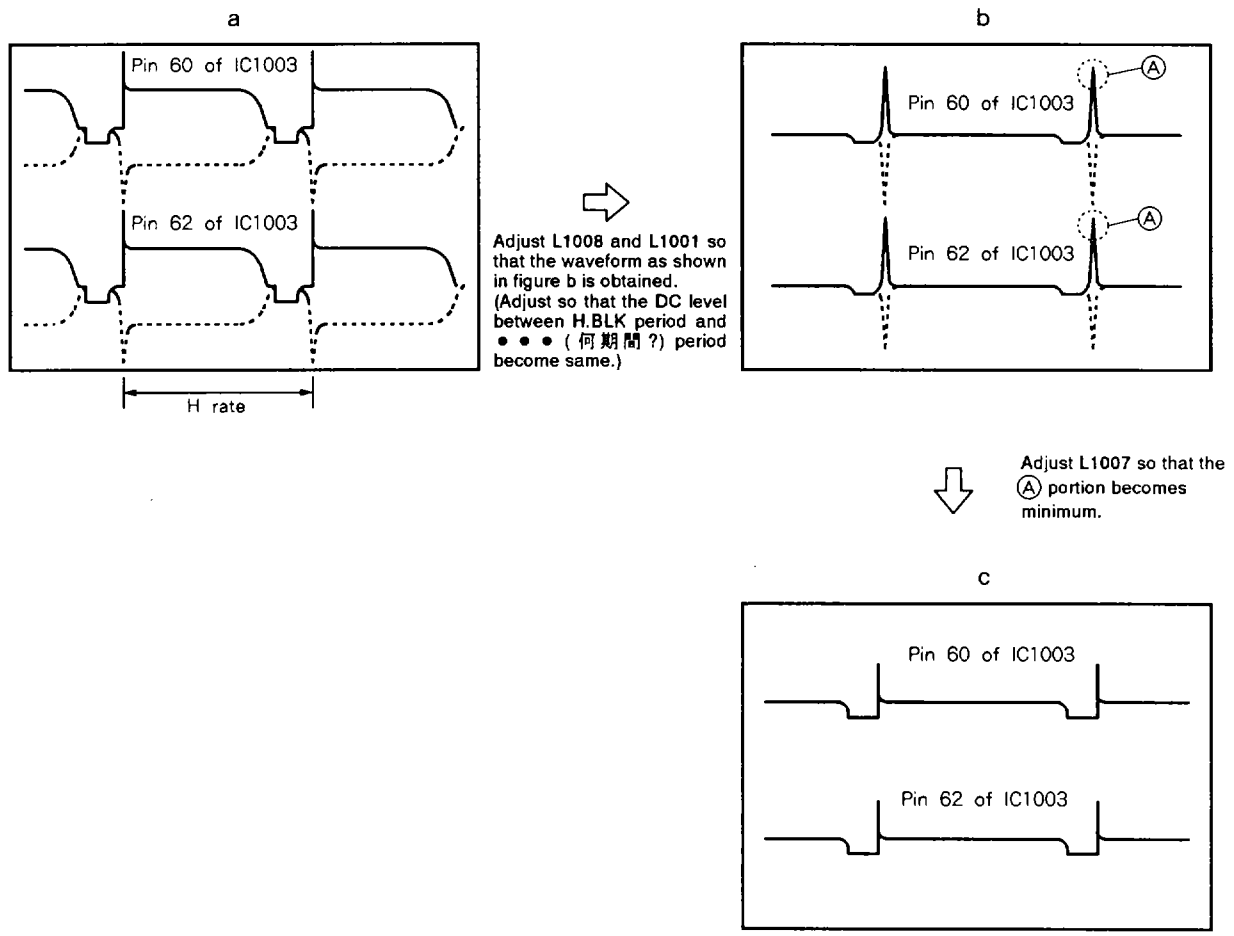

a
Pin 60 of IC1003
Pin 62 of IC1003
H rate
Adjust L1008 and L1001 so that the waveform as shown in figure b is obtained. (Adjust so that the DC level between H.BLK period and • • • (何期間 ?) period become same.)
b
Pin 60 of IC1003
Pin 62 of IC1003
Adjust L1007 so that the Ⓐ portion becomes minimum.
c
Pin 60 of IC1003
Pin 62 of IC1003

Fig. 7-7 SECAM detection coil adjustment

7.5 WHEN TUNER ASSY WAS REPAIRED

- Adjustment test points (TP) are located in the TUNER assy unless otherwise specified.

7.5.1 Tuner Section Adjustment

- The items to be adjusted here depend on the local TV standard systems. The systems for which the adjustments are required are shown in the respective rows of the table.
- For the necessary input signal, see Table 7 - 1.
  If not mentioned in the table, supply the signals to the antenna input terminal. Observe Fig. 7-10 when connecting.
- When receiving another TV system after performing the adjustments with the specified TV system, the reception condition may become insufficient. In this case, readjust with the current TV system or the best systems specified in Table 7 - 1.
- The trap adjustment in step 1 is separately described in another table. See section 7.5.2.
- This model is not equipped with the AFT (Automatic Fine Tuning) function.

Table 7 - 1

•Values shown for "fp" in the table are the reference values. Set for the nearest frequency and channel of those available in your servicing area.

Signal No.	Signal Contents	Antenna input Level *2	SG system setting *1
①	fp = 175.25MHz , 100% white Audio ; 1kHz, 100% MOD. monoural	80 dB μV	Any of B, G, I, D, K and M (B and G are the best.)
②	fp = 60.50MHz , 100% white Audio ; 400Hz, 70% AM	80 dB μV	L'
③	fp=175.25MHz, Multi burst Audio ; 1kHz, 100% MOD. monaural	58 dB μV	Any of B, G, I, D, K and M (B and G are the best.)
④	fp = 175.25MHz , 100% white Audio ; 400Hz, 70% AM	80 dB μV	L

*1: Set the SG system to the local TV system.

*2:Set the SG audio level to a value lower than the antenna input level by the following value.

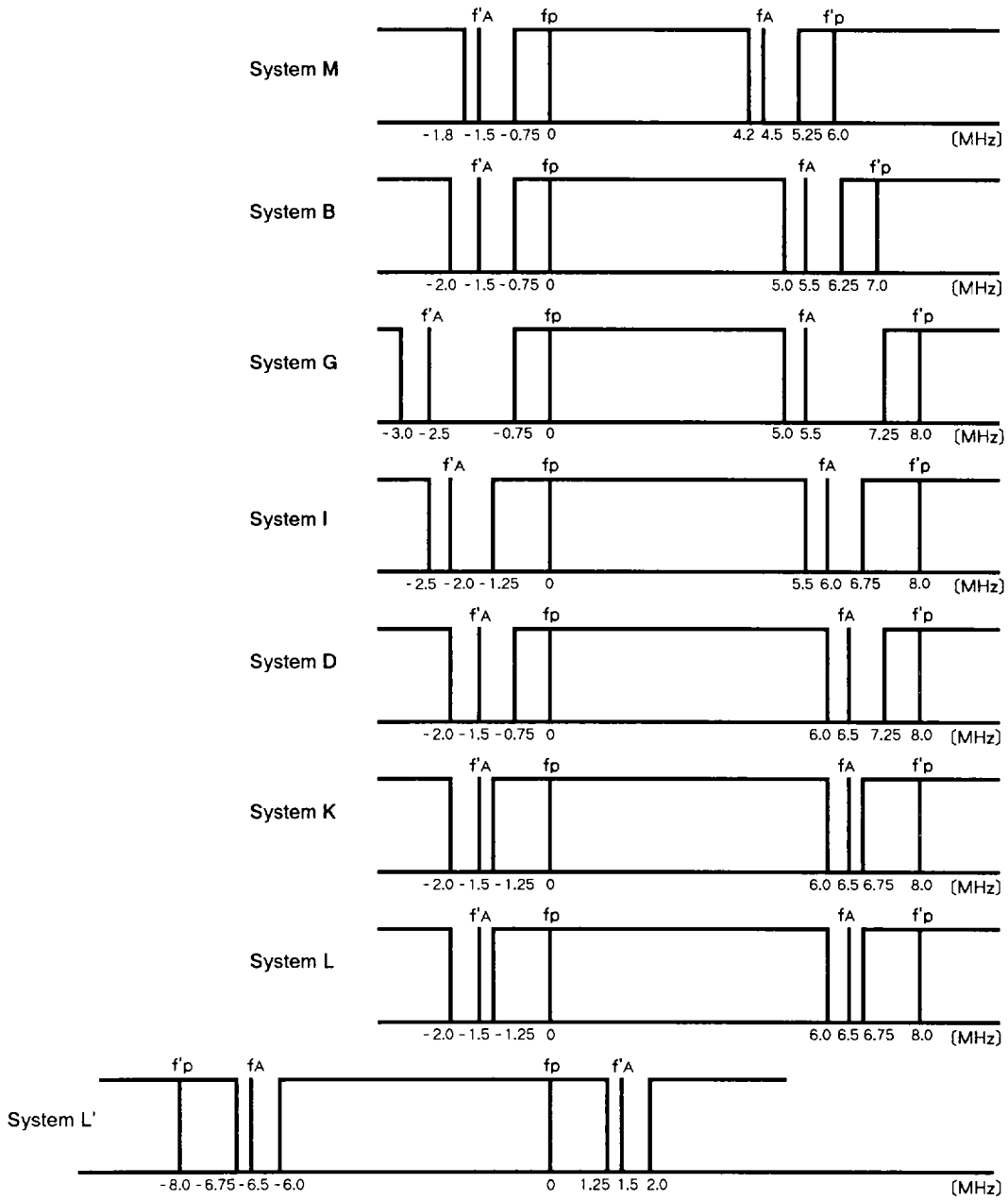
• System M : 6dB , • System B : 10dB , • System G : 10dB , • System I : 7dB , • System D :7dB ,
• System K : 7dB , • System L : 10dB , • System L' : 10dB

Step No.	Adjustment Item	System for Which the Adjustment is Required	Input Signal	Adjustment Point	Adjustment Procedure
1	Trap adjustment	This adjustment depends the local TV system. See section 7.5.2.			
2	VCO free run adjustment	B/G, I, D/K, L, L', M	——	VR1501(T)	• Connect TP1505 (AGC OUT) to GND. Connect pin 19 of IC1501 to +9V via a 1K Ω resistor. • Adjust so that the DC voltage at pin 26 of IC1501 becomes 4.5V ± 0.1V.
3	VCO adjustment	B/G, I, D/K, L, L', M	①	L1509(T)	Adjust so that the voltage on the + side of C1568 (VAPC) when TP1505 (AGC OUT) is ground is within ± 100mV when TP1505 is opened. (For L' system, perform the adjustment with L system, then adjust in step 4.)
4	VCO adjustment for L' adjustment	L'	②	TC1501(T)	After the step 3 VCO adjustment is complete, switch the system to L' and input signal to ②. Then, perform the same adjustment as step 3.

Step No.	Adjustment Item	System for Which the Adjustment is Required	Input Signal	Adjustment Point	Adjustment Procedure
5	AGC adjustment (* 1)	B/G, I, D/K, L, L', M	③	AGC (* 2)	Adjust the AGC value in the ADJ. IF mode of FACTORY ADJ mode so that the DC voltage of TP1503 (RF AGC) becomes 6.5V ± 0.3V.
6	Video level adjustment	B/G, I, D/K, M	①	VR1502(T)	Adjust so that the video level of TP1513 (VIDEO) becomes 2Vp-p ± 0.1V.
7	Video level adjustment for L and L' system	L, L'	④	V. LEVEL (* 2)	Adjust the V. LEVEL in the ADJ. IF mode of FACTORY ADJ mode so that the video level of TP1513 (VIDEO) becomes 2Vp-p ± 0.1V.
8	FM audio detection adjustment	M	①	L1510(T)	Adjust so that the audio level output to TP1755 (R) or TP1756 (L) becomes maximum and distortion ratio becomes minimum.
9	AM audio detection adjustment	L	④	L1705(T)	Adjust so that the audio level output to TP1755 (R) or TP1756 (L) becomes maximum and distortion ratio becomes minimum.
10	US audio MPX adjustment	M	See section 7.5.3.		

* 1 : When adjusting AGC in the L or L' system area, use SG of M, B, G, I, D or K (SG of B or G is best).
If these items are not adjusted properly, white saturation, noise or beat may be observed on the picture or the picture may be darkened.

* 2 : Adjust by the remote control unit.


System M
f'A fp fA f'p
-1.8 -1.5 -0.75 0 4.2 4.5 5.25 6.0 (MHz)
System B
f'A fp fA f'p
-2.0 -1.5 -0.75 0 5.0 5.5 6.25 7.0 (MHz)
System G
f'A fp fA f'p
-3.0 -2.5 -0.75 0 5.0 5.5 7.25 8.0 (MHz)
System I
f'A fp fA f'p
-2.5 -2.0 -1.25 0 5.5 6.0 6.75 8.0 (MHz)
System D
f'A fp fA f'p
-2.0 -1.5 -0.75 0 6.0 6.5 7.25 8.0 (MHz)
System K
f'A fp fA f'p
-2.0 -1.5 -1.25 0 6.0 6.5 6.75 8.0 (MHz)
System L
f'A fp fA f'p
-2.0 -1.5 -1.25 0 6.0 6.5 6.75 8.0 (MHz)
System L'
f'p fA fp f'A
-8.0 -6.75 -6.5 -6.0 0 1.25 1.5 2.0 (MHz)

NOTE: fp ;Video carrier
fA ;Audio carrier
f'p ;Upper adjacent video carrier
f'A ;Lower adjacent audio carrier
IF ;38.9(MHz)

Fig. 7 – 8 Relationship between the video and audio carrier frequencies of the TV system

7.5.2 Trap Adjustment

- This adjustment is separately described, as the adjustment procedure of the tuner section depends on the TV standard systems.
- For the signal to be input, see Table 7 - 2. Connect the signal to the antenna input terminal.

Table 7 - 2 Input signal

• Use the channel specified for the signal ①.

Input Signal	Video Modulation	Audio Modulation	Input Level	Channel
①	Non-modulation	Non-modulation	80dB μV	Free channel
②				Next higher channel of the signal ①
③				Next lower channel of the signal ①
④	4.43MHz CW or Color-bar			Free channel

Note:Set the SG audio level to a value lower than the antenna input level by the following value.

• System M : 6dB , • System B : 10dB , • System G : 10dB , • System I : 7dB , • System D : 7dB ,
• System K : 7dB , • System L : 10dB , • System L' : 10dB

• For System M

Step No.	Adjustment Item	Input Signal	Adjustment Point	Adjustment Procedure
1	Audio trap (WIDE) adjustment	① M	F1502 (T)	Adjust so that the 34.4MHz carrier level of TP1501 (SAW IN) becomes minimum.
2	Audio trap (NARROW) adjustment	① M	F1507 (T)	Adjust so that the 34.4MHz carrier level of TP1501 (SAW IN) becomes minimum.
3	Adjacent audio trap adjustment	③ M	F1513 (T)	Adjust so that the 40.4MHz carrier level of TP1501 (SAW IN) becomes minimum.
4	F1508 adjustment	——	F1508 (T)	Adjust when the video signal is not properly obtained. For adjustment procedure, refer to F1508 adjustment for system B/G.
5	Adjacent video trap adjustment	② M	F1501 (T)	Adjust so that the 32.9MHz carrier level of TP1501 (SAW IN) becomes minimum.
6	Adjacent video trap adjustment for SIF	② M	F1505 (T)	Adjust so that the 32.9MHz carrier level output from F1506 becomes minimum.
7	Adjacent audio trap adjustment for SIF	③ M	F1514 (T)	Adjust so that the 40.4MHz carrier level output from F1506 becomes minimum.

• For System B/G

Step No.	Adjustment Item	Input Signal	Adjustment Point	Adjustment Procedure
1	Audio trap (WIDE) adjustment	① B or G	F1502 (T)	Adjust so that the 33.4MHz carrier level of TP1501 (SAW IN) becomes minimum.
2	Audio trap (NARROW) adjustment	① B or G	F1507 (T)	Adjust so that the 33.4MHz carrier level of TP1501 (SAW IN) becomes minimum.
3	Adjacent audio trap adjustment for System B	③ B	F1513 (T)	Adjust so that the 40.4MHz carrier level of TP1501 (SAW IN) becomes minimum.
4	Adjacent audio trap adjustment for System G	③ G	F1508 (T)	Adjust so that the 41.4MHz carrier level of TP1501 (SAW IN) becomes minimum.
5	Adjacent video trap adjustment	② B	F1501 (T)	Adjust so that the 31.9MHz carrier level of TP1501 (SAW IN) becomes minimum.
6	Chroma trap adjustment for SIF	④ B or G	F1505 (T)	Adjust so that the 34.47MHz carrier level output from F1506 becomes minimum.
7	Adjacent audio trap adjustment for SIF	③ B	F1514 (T)	Adjust so that the 40.4MHz carrier level output from F1506 becomes minimum.

• For System I

Step No.	Adjustment Item	Input Signal	Adjustment Point	Adjustment Procedure
1	F1502 adjustment	——	F1502 (T)	Adjust when the video signal is not properly obtained. For adjustment procedure, refer to F1502 adjustment for system B/G.
2	F1507 adjustment	——	F1507 (T)	Adjust when the video signal is not properly obtained. For adjustment procedure, refer to F1507 adjustment for system B/G.
3	Adjacent audio trap adjustment	③ I	F1513 (T)	Adjust so that the 40.9MHz carrier level of TP1501 (SAW IN) becomes minimum.
4	F1508 adjustment	——	F1508 (T)	Adjust when the video signal is not properly obtained. For adjustment procedure, refer to F1508 adjustment for system B/G.
5	Audio trap adjustment	① I	F1501 (T)	Adjust so that the 32.9MHz carrier level of TP1501 (SAW IN) becomes minimum.
6	Chroma trap adjustment for SIF	④ I	F1505 (T)	Adjust so that the 34.47MHz carrier level output from F1506 becomes minimum.
7	F1514 adjustment	——	F1514 (T)	Adjust when the video signal is not properly obtained. For adjustment procedure, refer to F1514 adjustment for system B/G.

• For System D/K

Step No.	Adjustment Item	Input Signal	Adjustment Point	Adjustment Procedure
1	Audio trap (WIDE) adjustment	① D or K	F1502 (T)	Adjust so that the 32.4MHz carrier level of TP1501 (SAW IN) becomes minimum.
2	Audio trap (NARROW) adjustment	① D or K	F1507 (T)	Adjust so that the 32.4MHz carrier level of TP1501 (SAW IN) becomes minimum.
3	Adjacent audio trap adjustment	③ D or K	F1513 (T)	Adjust so that the 40.4MHz carrier level of TP1501 (SAW IN) becomes minimum.
4	F1508 adjustment	——	F1508 (T)	Adjust when the video signal is not properly obtained. For adjustment procedure, refer to F1508 adjustment for system B/G.
5	Audio trap adjustment	① D or K	F1501 (T)	Adjust so that the 32.4MHz carrier level of TP1501 (SAW IN) becomes minimum.
6	Chroma trap adjustment for SIF	④ D or K	F1505 (T)	Adjust so that the 34.47MHz carrier level output from F1506 becomes minimum.
7	Adjacent audio trap adjustment for SIF	③ D or K	F1514 (T)	Adjust so that the 40.4MHz carrier level output from F1506 becomes minimum.

• For System L, L'

Step No.	Adjustment Item	Input Signal	Adjustment Point	Adjustment Procedure
1	Audio trap (WIDE) adjustment	① L	F1502 (T)	Adjust so that the 32.4MHz carrier level of TP1501 (SAW IN) becomes minimum.
2	Audio trap (NARROW) adjustment	① L	F1507 (T)	Adjust so that the 32.4MHz carrier level of TP1501 (SAW IN) becomes minimum.
3	Adjacent audio trap adjustment	③ L	F1513 (T)	Adjust so that the 40.4MHz carrier level of TP1501 (SAW IN) becomes minimum.
4	F1508 adjustment	——	F1508 (T)	Adjust when the video signal is not properly obtained. For adjustment procedure, refer to F1508 adjustment for system B/G.
5	Audio trap adjustment	① L	F1501 (T)	Adjust so that the 32.4MHz carrier level of TP1501 (SAW IN) becomes minimum.
6	Chroma trap adjustment for SIF	④ L	F1505 (T)	Adjust so that the 34.47MHz carrier level output from F1506 becomes minimum.
7	Adjacent audio trap adjustment for SIF	③ L	F1514 (T)	Adjust so that the 40.4MHz carrier level output from F1506 becomes minimum.

7.5.3 US Audio MPX Adjustment

- No adjustment required when replacing the assembly.
- Connection diagram is refered to Fig. 7 - 10.
- Adjustment points and test points are shown in Fig.7 - 21.
- Perform the adjustment by using the channel 9 unless otherwise noted.
- Video and Audio input signals are described in the below.

Ⓝ ; No signal

•Video signal

V ① ; fp = EIA color bar, 60 dB μV

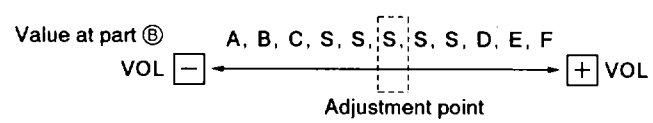
•Audio signal (STEREO)

dbx noise reduction ON, PRE - EMPHASIS ON

S ① ; fA = 300Hz, 30% MOD.
L ch (or R ch) only, 54 dB μV

S ② ; fA = 5kHz, 30% MOD.
L ch (or R ch) only, 54 dB μV

Audio System

Step No.	Adjustment Item	Input Signal		Adjustment Point	Adjustment Procedure
		Video	Audio		
1	STEREO VCO	Ⓝ	Ⓝ	Remote control unit	• Press the numeric key [2] of the remote control unit for ST VCO adjustment mode. • Measure the R ch output frequency of the OUTPUT REC terminal and adjust with the VOL [+] and [-] keys so that the frequency becomes closest to the 62.936kHz.
2	SAP VCO	Ⓝ	Ⓝ	Remote control unit	• Connect the TP1653 to +9V via a 4.7 µF capacitor and input the 78.67kHz ; 147 mVrms signal to TP-MPX. • Press the numeric key [3] of the remote control unit. • Wait until "COMPLETE !" is displayed at part Ⓐ of the screen (see Fig. 7-9). • If "TRY AGAIN ! " is displayed, adjust again using the following method. 1. Press the VOL [+] and [-] keys and adjust so that the value at part Ⓑ of the screen (see Fig. 7-9) becomes 25 or 05. 2. Press the VOL [-] key slowly once at a time until the value at part Ⓑ of the screen changes from 25 or 05 to a different value. 3. Press the VOL [+] key slowly once at a time while counting it until the value at part Ⓑ of the screen changes from 25 or 05 to a different value. 4. Press the VOL [-] key for half the number of times counted. 5. If the counted number is odd, subtract 1 from it and press the VOL [-] key for half of the resultant number. Note : If the value at part Ⓑ does not become 25 or 05, the value which is not changed when pressing the VOL [+] and [-] keys regarded it as 25 or 05 . Then adjust above adjustment. (Perform the same adjustment as step 3 and 4.) A, B, C, D, ...; Different Value S ; Same value (25 or 05 or .....) 
3	STEREO LPF adjustment	Ⓝ	Ⓝ	Remote control unit	• Connect the TP1653 to +9V via a 4.7 µF capacitor and input the 9.4kHz ; 600 mVrms signal to TP-MPX. • Press the numeric key [4] of the remote control unit. • Wait until "COMPLETE !" is displayed at part Ⓐ of the screen (see Fig. 7-9). • If "TRY AGAIN ! " is displayed, adjust again using the following method. 1. Press the VOL [+] and [-] keys and adjust so that the value at part Ⓑ of the screen (see Fig. 7-9) becomes 31. 2. Press the VOL [-] key slowly once at a time until the value at part Ⓑ of the screen changes from 31 to a different value. 3. Press the VOL [+] key slowly once at a time while counting it until the value at part Ⓑ of the screen changes from 31 to a different value. 4. Press the VOL [-] key for half the number of times counted. 5. If the counted number is odd, subtract 1 from it and press the VOL [-] key for half of the resultant number.

Step No.	Adjustment Item	Input Signal		Adjustment Point	Adjustment Procedure
		Video	Audio		
4	SAP LPF adjustment	Ⓝ	Ⓝ	Remote control unit	• Connect the TP1653 to +9V via a 4.7 μF capacitor and input the 88kHz ; 120 mVrms signal to TP-MPX. • Press the numeric key [5] of the remote control unit. • Wait until "COMPLETE !" is displayed at part Ⓐ of the screen (see Fig. 7-9). • If "TRY AGAIN ! " is displayed, adjust again using the following method. 1. Press the VOL [+] and [-] keys and adjust so that the value at part Ⓑ of the screen (see Fig. 7-9) becomes 33. 2. Press the VOL [-] key slowly once at a time until the value at part Ⓑ of the screen changes from 33 to a different value. 3. Press the VOL [+] key slowly once at a time while counting it until the value at part Ⓑ of the screen changes from 33 to a different value. 4. Press the VOL [-] key for half the number of times counted. 5. If the counted number is odd, subtract 1 from it and press the VOL [-] key for half of the resultant number.
5 6	* Separation adjustment (WIDEBAND)	V①	S①	Remote control unit	• Press the numeric key [7] of the remote control unit. • Adjust the output of the OUTPUT REC terminal on the rear panel to minimum level. (Adjust the R ch level becomes minimum at the L ch input and the L ch level becomes minimum at the R ch input.)
7	Repeat step 5 and 6 to obtained best separation.				
8 9	* Separation adjustment (SPECTRAL)	V①	S②	Remote control unit	• Press the numeric key [6] of the remote control unit. • Adjust the output of the OUTPUT REC terminal on the rear panel to minimum level. (Adjust the R ch level becomes minimum at the L ch input and the L ch level becomes minimum at the R ch input.)
10	Repeat steps 8 and 9 to obtained best separation.				
11	Repeat steps 5, 6, 8 and 9 to obtained best separation.				

* : When performing the separation adjustment, be sure to perform WIDE BAND adjustment first.
Note : Adjustment value of "1 ATT " is fixed to 9. If this value is not 9, Adjust so that the value to 9 by using the VOL [+] and [-] keys.

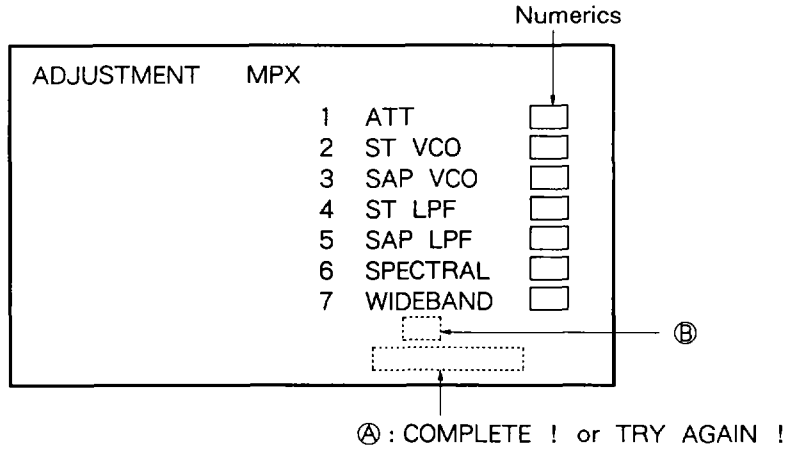


Fig. 7-9 Display of ADJUSTMENT MPX mode screen

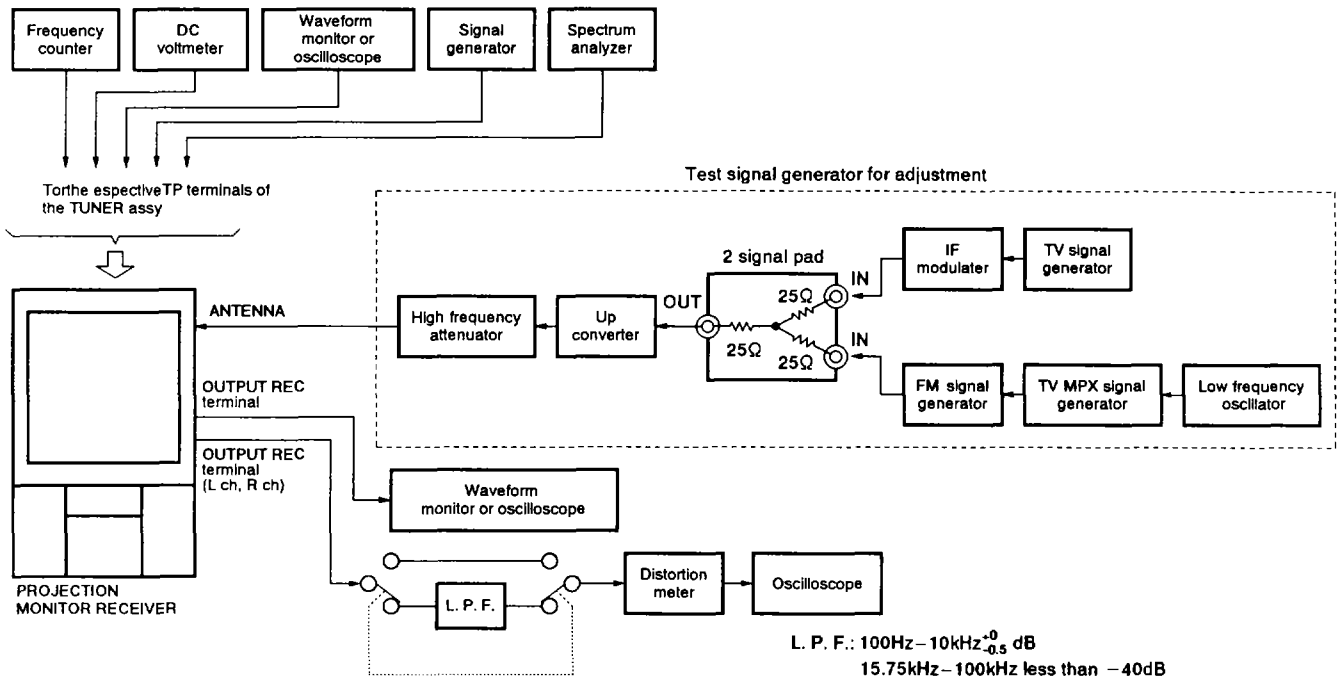


Fig. 7-10 Connection diagram when adjusting the tuner section

7.6 WHEN TUNER ASSY WAS REPLACED

- No adjustment required.

Note : For the non-volatile memory on the TUNER assy, use as it is on the new TUNER assy.

7.7 WHEN CONVERGENCE ASSY WAS REPAIRED OR REPLACED

7.7.1 Adjustment Procedure (Coarse adjustment)

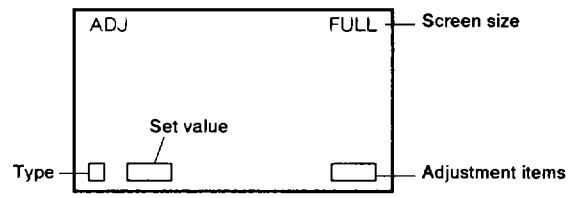
- Adjustment test point(TP)are located in the CONVERGENCE assy.
- Perform this adjustment only when convergence is shifted.

Step No.	Adjustment Item	Input Signal	Adjustment Point	Adjustment Procedure
1	Horizontal size coarse adjustment	Monoscope signal or general broadcasting	VR602 (C)	• Set GH SIZE of ADJ. CONVERGENCE mode in FACTORY ADJ mode to 0. (Full screen size) • Set the screen size to full mode. • When monoscope signal is used, adjust so that the right and left sections of the screen become 92% ± 2%. • When general broadcasting is used, adjust so that the does not blacken.
2	Horizontal pin coarse adjustment	Cross hatch signal	VR601 (C)	• Set the screen size to full mode. • Adjust so that the vertical lines in the right and left sections of the screen are straight. • At this time, when red, green and blue lines are not converged, adjust so that the green line is attentioned.
3	Vertical size coarse adjustment	Monoscope signal or general broadcasting	VR603 (C)	• Set GV SIZE of ADJ. CONVERGENCE mode in FACTORY ADJ mode to 0. (Full screen size) • Set the screen size to full mode. • When monoscope signal is used, adjust so that the upper and lower sections of the screen become 93% ± 2%. • When general broadcasting is used, adjust so that the does not blacken.

7.7.2 CONVERGENCE ADJUSTMENT

1. Adjustment Method for Convergence

- Perform the coarse adjustment (step 1 to 3 in section 7.7.1) before adjust the convergence.
- Perform the adjustment in ADJUSTMENT CONVERGENCE mode in 1st. FACTORY ADJ mode. (Refer to section 7.1.)
- Input a cross-hatch signal (PAL) from the video-signal generator to the video input terminal. For adjustment, use the remote control unit.
- Perform the adjustment by using the PAL signal. When adjusting with the NTSC signal, perform the adjustment after set the set values of the ADJUSTMENT NTSC OFFSET mode in FACTORY ADJ mode to RH LIN=+5 and BH LIN= − 5.
- With this unit, convergence adjustment is required for each screen size : Natural wide, Full, Zoom, and Cinema wide. The normal screen (4 : 3) uses the same circuit as the full screen. Therefore, adjusting the full screen simultaneously adjusts the normal screen.
- Before perform the adjustment, be sure to enter the ADJ. AUTO CONVER mode (for adjustment in the factory) in FACTORY ADJ mode, then perform the adjustment after the adjustment value of user point convergence is cleared.
  If it does not cleared, convergence adjustment will be shifted when releasing the FACTORY ADJ mode.



• Operating procedure

Alphabetics shown in the lower-left portion of the screen indicate the type of convergence. Change the type by pressing the PROGRAM [+], [-] keys on the remote control unit. Every time the PROGRAM [+], [-] keys are pressed, the type changes in the order

RH → RV → BH → BV → GH → GV cyclically.

The characters to the right of the type indicate the set value, and can be changed with the ◿ (VOLUME) [+], [-] keys on the remote control unit.

It the lower-right portion of the screen, the adjustment items are displayed. The items are assigned to the numeric keys from [0]: STATIC to [9]: SUB LIN, on the remote control unit.

• Outputting red, green and blue as a single color

- Press the [RED] key on the remote control unit
  ·····Turn red color ON/OFF.
- Press the [GREEN] key on the remote control unit
  ·····Turn green color ON/OFF.
- Press the [BLUE] key on the remote control unit
  ····· Turn blue color ON/OFF.

To change the displayed color, be sure to press [+] key. If the next key is pressed without [+] key, colors are overlaid.

• Type
  Select with PROGRAM [+] or [-] keys

RH (Red • Horizontal)
↓
RV (Red • Vertical)
↓
BH (Blue • Horizontal)
↓
BV (Blue • Vertical)
↓
GH (Green • Horizontal)
↓
GV (Green • Vertical)

• Set value
  Adjust the value by pressing the ◿ (VOLUME) [+] or [-] keys on the remote control unit.

•Adjustment items
(assigned to the numeric keys)
Example : When the type is RH

[0] : STATIC
[1] : SKEW
[2] : BOW → 4TH BOW
[3] : SUB KEY
[4] : KEY
[5] : SUB PIN → M S PIN → 4 S PIN
[6] : PIN → MID PIN → 4TH PIN
[7] : LIN → 4TH LIN
[8] : SIZE
[9] : SUB LIN

Fig. 7-11 Adjustment method for convergence

• List of Adjustment Items

Numeric keys	Adjustment items	Type					
		GH	GV	RH	RV	BH	BV
0	STATIC	○	○	○	○	○	○
1	SKEW	○	○	○	○	○	○
2	BOW → 4TH BOW	○	○	○	○	○	○
		○	/	○	/	○	/
3	SUB KEY	○	○	○	○	○	○
4	KEY → MID KEY	○	○	○	○	○	○
		/	○	/	○	/	○
5	SUB PIN → M S PIN → 4 S PIN → S C PIN	○	○	○	○	○	○
		○	/	○	/	○	/
		○	/	○	/	○	/
		/	○	/	○	/	○
6	PIN → MID PIN → 4TH PIN	○	○	○	○	○	○
		○	○	○	○	○	○
		○	○	○	○	○	○
7	LIN → 4TH LIN	○	○	○	○	○	○
		○	/	○	/	○	/
8	SIZE	○	○	○	○	○	○
9	SUB LIN	○	○	○	○	○	○

○ = Exists, / =None

- Adjustment values of amount of screen information (horizontal/vertical size) in each screen size (mode).

Input signal : Monoscope (PAL)

	Horizontal size	Vertical size
Natural wide	93% ± 2%	88% ± 3%
Full	92% ± 2%	93% ± 3%
Zoom	91% ± 2%	71% ± 3%
Cinema wide	93% ± 2%	78% ± 3%

- Adjustment values of amount of screen information are refered to PAL signal.
- Amount of screen information in each screen size (mode) at NTSC signal after above adjustment with PAL signal.

Input signal : Monoscope (NTSC) Reference value

	Horizontal size	Vertical size
Natural wide	92%	85%
Full	90%	91%
Zoom	90%	69%
Cinema wide	92%	77%

2. Green Line Adjustment

- A green line is a reference line for the red and blue lines. Be sure to adjust precisely.
- Perform the green line adjustment with a single green color.
- For information on blocks which are referred to in some operation columns, see Fig. 7- 12 and 7-16.

• Horizontal Adjustment of Green Lines

Step No.	Adjustment Item		Adjustment Procedure
1	Center line adjustment	GH-SKEW	Adjust so that the center vertical line of the screen is not leaned.
2		GH-BOW	Adjust so that the center vertical line of the screen is not distorted and is straight.
3		GH-4TH BOW	
4		GH-STATIC	Converge the center vertical line in the green vertical line.
5	Repeat steps 1 through 4 to obtain the optimum center vertical line.		
6	Lean adjustment	GH-SUB KEY	Adjust so that the vertical lines in the B and C blocks of the screen are not leaned.
7		GH-KEY	
8	Repeat steps 6 and 7 to obtain vertical lines that are most perfectly vertical in the B and C blocks of the screen.		
9	Distortion adjustment	GH-M S PIN	Adjust so that the vertical lines in the right and left sections of the screen are not distorted and are straight.
10		GH-SUB PIN	
11		GH-4 S PIN	
12		GH-MID PIN	
13		GH-PIN	
14		GH-4TH PIN	
15	Repeat steps 9 through 14 to obtain straight vertical lines in the right and left sections of the screen.		
16	Repeat steps 6 through 15 to obtain the optimum vertical lines in the right and left sections of the screen.		
17	Line intervals adjustment	GH-4TH LIN	Adjust the intervals of the vertical lines in the right and left sections of the screen and converge them in the green vertical lines.
18		GH-LIN	
19		GH-SIZE	
20		GH-SUB LIN	
21	Repeat steps 17 through 20 to obtain the optimum vertical lines in the right and left sections of the screen.		
22	Fine-adjust over the entire picture to obtain the optimum picture.		

• Vertical Adjustment of Green Lines

Step No.	Adjustment Item		Adjustment Procedure
1	Center line adjustment	GV-SKEW	Adjust so that the center horizontal line of the screen is not leaned.
2		GV-BOW	Adjust so that the center horizontal line of the screen is not distorted and is straight.
3		GV-STATIC	Converge the center horizontal line in the green horizontal line.
4	Repeat steps 1 through 3 to obtain the optimum center horizontal line.		
5	Lean adjustment	GV-MID KEY	Adjust so that the horizontal lines in the D and E blocks of the screen are not leaned.
6		GV-SUB KEY	
7		GV-KEY	
8	Repeat steps 5 and 7 to obtain the horizontal lines that are most perfectly horizontal in the D and E blocks of the screen.		
9	Distortion adjustment	GV-SUB PIN	Adjust so that the horizontal lines in the upper and lower sections of the screen are not distorted and are straight.
10		GV-MID PIN	
11		GV-PIN	
12		GV-S C PIN	
13		GV-4TH PIN	
14	Repeat steps 9 through 13 to obtain straight horizontal lines in the upper and lower sections of the screen.		
15	Repeat steps 5 through 14 to obtain the optimum horizontal lines in the upper and lower sections of the screen.		
16	Line intervals adjustment	GV-LIN	Adjust the intervals of the horizontal lines in the D and E blocks of the screen and converge them in the green horizontal lines.
17		GV-SIZE	
18		GV-SUB LIN	
19	Repeat steps 16 through 18 to obtain the optimum horizontal lines in the upper and lower sections of the screen.		
20	Fine-adjust over the entire picture to obtain the optimum picture.		

3. Red Line Adjustment

- Adjust the red line convergence using a green line and red line.
- Adjust it by overlaying a red line on a green line using the ◿ (VOLUME) [+], [-] keys on the remote control unit so that the line becomes yellow.
- After making the adjustments for all items, perform fine adjustment referring to the whole screen.
- For information on blocks which are referred to in some operation columns, see Fig. 7- 12 and 7-16.

• Horizontal Adjustment of Red Lines

Step No.	Adjustment Item		Adjustment Procedure
1	Center line adjustment	RH-SKEW	Adjust so that the center vertical line of the screen is not leaned.
2		RH-BOW	Adjust so that the center vertical line of the screen is not distorted and is straight.
3		RH-4TH BOW	
4		RH-STATIC	Converge the center vertical line in the green vertical line.
5	Repeat steps 1 through 4 to obtain the optimum center vertical line.		
6	Lean adjustment	RH-SUB KEY	Adjust so that the vertical lines in the B and C blocks of the screen are not leaned.
7		RH-KEY	
8	Repeat steps 6 and 7 to obtain vertical lines that are most perfectly vertical in the B and C blocks of the screen.		
9	Distortion adjustment	RH-M S PIN	Adjust so that the vertical lines in the right and left sections of the screen are not distorted and are straight.
10		RH-SUB PIN	
11		RH-4 S PIN	
12		RH-MID PIN	
13		RH-PIN	
14		RH-4TH PIN	
15	Repeat steps 9 through 14 to obtain straight vertical lines in the right and left sections of the screen.		
16	Repeat steps 6 through 15 to obtain the optimum vertical lines in the right and left sections of the screen.		
17	Line intervals adjustment	RH-4TH LIN	Adjust the intervals of the vertical lines in the right and left sections of the screen and converge them in the green vertical lines.
18		RH-LIN	
19		RH-SIZE	
20		RH-SUB LIN	
21	Repeat steps 17 through 20 to obtain the optimum vertical lines in the right and left sections of the screen.		
22	Fine-adjust over the entire picture to obtain the optimum picture.		

• Vertical Adjustment of Red Lines

Step No.	Adjustment Item		Adjustment Procedure
1	Center line adjustment	RV-SKEW	Adjust so that the center horizontal line of the screen is not leaned.
2		RV-BOW	Adjust so that the center horizontal line of the screen is not distorted and is straight.
3		RV-STATIC	Converge the center horizontal line in the green horizontal line.
4	Repeat steps 1 through 3 to obtain the optimum center horizontal line.		
5	Lean adjustment	RV-MID KEY	Adjust so that the horizontal lines in the D and E blocks of the screen are not leaned.
6		RV-SUB KEY	
7		RV-KEY	
8	Repeat steps 5 and 7 to obtain the horizontal lines that are most perfectly horizontal in the D and E blocks of the screen.		
9	Distortion adjustment	RV-SUB PIN	Adjust so that the horizontal lines in the upper and lower sections of the screen are not distorted and are straight.
10		RV-MID PIN	
11		RV-PIN	
12		RV-S C PIN	
13		RV-4TH PIN	
14	Repeat steps 9 through 13 to obtain straight horizontal lines in the upper and lower sections of the screen.		
15	Repeat steps 5 through 14 to obtain the optimum horizontal lines in the upper and lower sections of the screen.		
16	Line intervals adjustment	RV-LIN	Adjust the intervals of the horizontal lines in the D and E blocks of the screen and converge them in the green horizontal lines.
17		RV-SIZE	
18		RV-SUB LIN	
19	Repeat steps 16 through 18 to obtain the optimum horizontal lines in the upper and lower sections of the screen.		
20	Fine-adjust over the entire picture to obtain the optimum picture.		

4. Blue Line Adjustment

- Adjust the blue line convergence using a green line and blue line.
- Adjust it by overlaying a blue line on a green line using the ◿ (VOLUME) [+], [-] keys on the remote control unit so that the line becomes cyan.
- After making the adjustments for all items, perform fine adjustment referring to the whole screen.
- For information on blocks which are referred to in some operation columns, see Fig.7–12 and Fig.7–16.

• Horizontal Adjustment of Blue Lines

Step No.	Adjustment Item		Adjustment Procedure
1	Center line adjustment	BH-SKEW	Adjust so that the center vertical line of the screen is not leaned.
2		BH-BOW	Adjust so that the center vertical line of the screen is not distorted and is straight.
3		BH-4TH BOW	
4		BH-STATIC	Converge the center vertical line in the green vertical line.
5	Repeat steps 1 through 4 to obtain the optimum center vertical line.		
6	Lean adjustment	BH-SUB KEY	Adjust so that the vertical lines in the B and C blocks of the screen are not leaned.
7		BH-KEY	
8	Repeat steps 6 and 7 to obtain vertical lines that are most perfectly vertical in the B and C blocks of the screen.		
9	Distortion adjustment	BH-M S PIN	Adjust so that the vertical lines in the right and left sections of the screen are not distorted and are straight.
10		BH-SUB PIN	
11		BH-4 S PIN	
12		BH-MID PIN	
13		BH-PIN	
14		BH-4TH PIN	
15	Repeat steps 9 through 14 to obtain straight vertical lines in the right and left sections of the screen.		
16	Repeat steps 6 through 15 to obtain the optimum vertical lines in the right and left sections of the screen.		
17	Line intervals adjustment	BH-4TH LIN	Adjust the intervals of the vertical lines in the right and left sections of the screen and converge them in the green vertical lines.
18		BH-LIN	
19		BH-SIZE	
20		BH-SUB LIN	
21	Repeat steps 17 through 20 to obtain the optimum vertical lines in the right and left sections of the screen.		
22	Fine-adjust over the entire picture to obtain the optimum picture.		

• Vertical Adjustment of Blue Lines

Step No.	Adjustment Item		Adjustment Procedure
1	Center line adjustment	BV-SKEW	Adjust so that the center horizontal line of the screen is not leaned.
2		BV-BOW	Adjust so that the center horizontal line of the screen is not distorted and is straight.
3		BV-STATIC	Converge the center horizontal line in the green horizontal line.
4	Repeat steps 1 through 3 to obtain the optimum center horizontal line.		
5	Lean adjustment	BV-MID KEY	Adjust so that the horizontal lines in the D and E blocks of the screen are not leaned.
6		BV-SUB KEY	
7		BV-KEY	
8	Repeat steps 5 and 7 to obtain the horizontal lines that are most perfectly horizontal in the D and E blocks of the screen.		
9	Distortion adjustment	BV-SUB PIN	Adjust so that the horizontal lines in the upper and lower sections of the screen are not distorted and are straight.
10		BV-MID PIN	
11		BV-PIN	
12		BV-S C PIN	
13		BV-4TH PIN	
14	Repeat steps 9 through 13 to obtain straight horizontal lines in the upper and lower sections of the screen.		
15	Repeat steps 5 through 14 to obtain the optimum horizontal lines in the upper and lower sections of the screen.		
16	Line intervals adjustment	BV-LIN	Adjust the intervals of the horizontal lines in the D and E blocks of the screen and converge them in the green horizontal lines.
17		BV-SIZE	
18		BV-SUB LIN	
19	Repeat steps 16 through 18 to obtain the optimum horizontal lines in the upper and lower sections of the screen.		
20	Fine-adjust over the entire picture to obtain the optimum picture.		

5. Picture Movements in Horizontal Adjustments

The adjustments in the horizontal direction are performed by applying the convergence correction signals to the horizontal deflection and changing the amount of the correction. With these adjustments, the vertical lines will move.

This section describes the picture movements and the adjusting points when adjusting each item using a cross hatch signal input.

See Fig. 7 - 12 for reference, in which each of the sections to the right and left to the center vertical line of the screen are divided into three blocks to describe the picture movements.

● Center-line adjustment in the Horizontal Direction

See Table 7-3 for the picture movements and general information on this adjustment.

This adjustment consists of H - SKEW, H - BOW, H - 4TH BOW and H - STATIC to correct the overall picture.

Adjust the center vertical line so that it is not distorted and is straight and perfectly vertical.

The center vertical line does not move when adjusting the other items. Use the center vertical line set through this adjustment as reference for the other adjustments. After adjusting the center line, adjust the screen sections to the right and left of the center line.

Note that there may be some deviation in the overall picture if this adjustment is performed alone. Finely adjust the picture with subsequent adjustments.

Caution

Be sure to adjust H - STATIC by changing the data value within the range (010 to - 010) of the telop indication in CONVER ADJ mode of FACTORY ADJ mode. If this range is exceeded, the convergence assembly may be damaged. If the adjustment is not possible within the range of 010 to - 010, set the data value to 0, turn the centering magnet of the deflection yoke and fine - adjust H - STATIC.

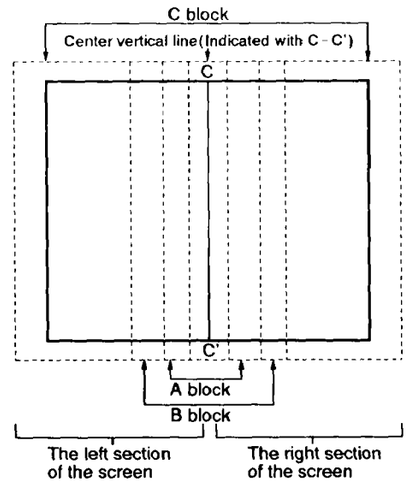
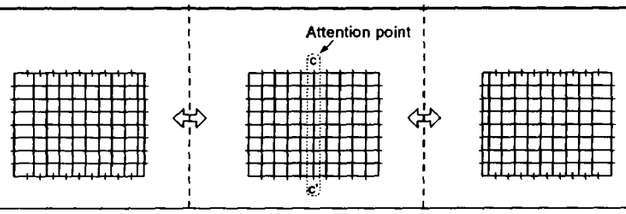
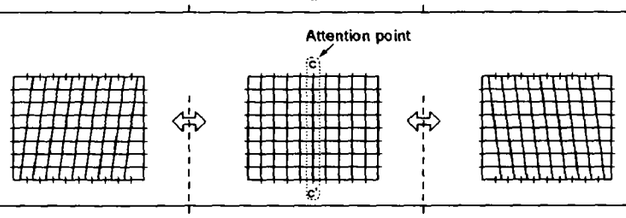
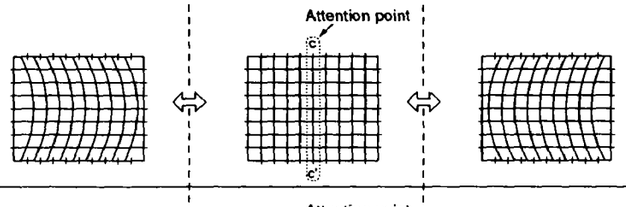
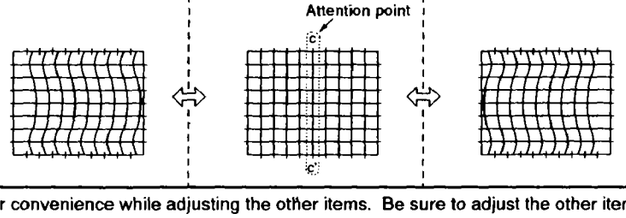


Fig. 7-12 Screen Divisions for Horizontal Adjustment

Table 7-3 Center-line Adjustment in the Horizontal Direction

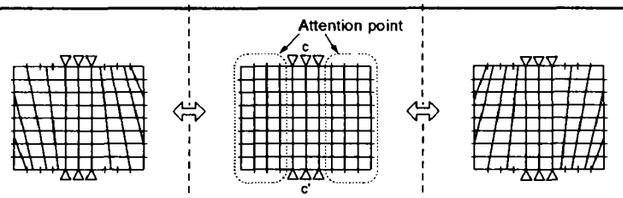
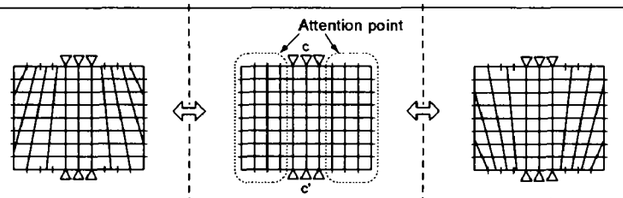
Item	Deviating Picture	Corrected Picture	Deviating Picture	Attention Point on the Screen During Adjustment	Adjustment Point		Remarks
H-STATIC *1				Center vertical line	Move the vertical line at the attention point on the screen shown in the figure to the left to converge it in the green line which has been set for reference. This provides the reference position of the center vertical line for the convergence adjustment.		The overall picture moves in parallel in the same manner as with the user-convergence adjustment.
H-SKEW				Center vertical line	Eliminate the lean at the attention point on the screen shown in the figure to the left.	Adjust H - SKEW, H - BOW, H - 4TH BOW repeatedly until the center vertical line is straight and is perfectly vertical. Adjust H - SKEW and H - 4TH BOW so that the A blocks are in the optimal condition. (The lean and waving distortion in the A blocks cannot be eliminated with the other adjustments.)	The lean of the overall picture is corrected. As shown in the figure to the left, the overall picture is leaned.
H-BOW				Center vertical line	Adjust so that the bowed line at the attention point on the screen shown in the figure to the left is straight.		The bowed lines over the overall screen are corrected. All the vertical lines are bowed as shown in the figure to the left.
H-4TH BOW				Center vertical line	Adjust so that the wavy line in the attention-point on the screen shown in the figure to the left is straight.		The waving (fourth-order) distortion over the overall screen is corrected. As shown in the figure to the left, the whole picture is distorted in waves.

*1 : H-STATIC can be shifted for convenience while adjusting the other items. Be sure to adjust the other items in consideration of the shift in H-STATIC and then readjust H-STATIC. (Be sure to shift it within the telop indication range of 010 to -010.)

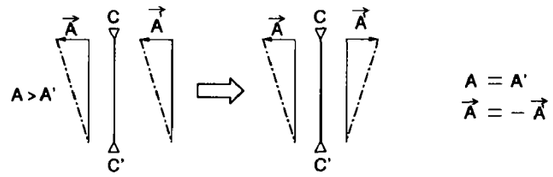
● Lean Adjustment in the Horizontal Direction

See Table 7-4 for the picture movements and general information on this adjustment.
The right and left sections of the screen are corrected with H-SUB KEY and H-KEY. Adjust the lean in the B and C blocks on the screen to eliminate.

Table 7-4 Lean adjustment in the Horizontal direction

Item	Deviating Picture	Corrected Picture Screen	Deviating Picture	Attention Point on the Screen During Adjustment	Adjustment Point		Remarks
H-SUB KEY				B and C blocks	Adjust to eliminate any lean at the attention-point blocks on the screen shown in the figure to the left. If the lean cannot be eliminated, set the screen to the status in which H-KEY has deviation as shown in Fig. 7-13, and adjust H-KEY.	Alternately adjust H-SUB KEY and H-KEY so that the lean in the B and C blocks is eliminated.	The lean in the B and C blocks on the screen is corrected. The right and left sections of the screen move in the same direction.
H-KEY				B and C blocks	Adjust to eliminate the lean in the attention-point blocks on the screen shown in the figure to the left.		The lean in the the B and C blocks on the screen is corrected. The right and left sections move symmetrically in relation to the center line.

Note:
▷——◁ : Line which does not move.



Note:
C ▷——◁ C' : Center vertical line
——— : Reference line
-·-·-·-·- : Leaned line

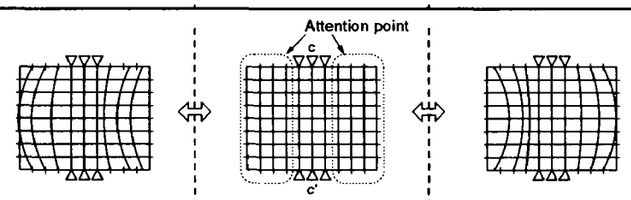
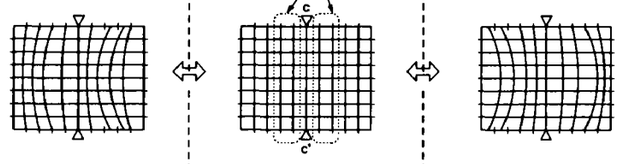
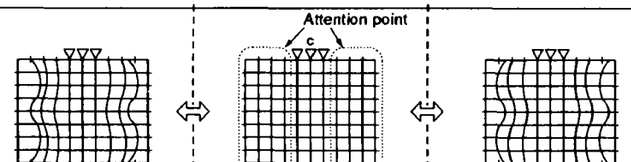
$\vec{A}$: Vector of the deviation in the left section of the screen
$\vec{A}$: Vector of the deviation in the right section of the screen
A : Scalar quantity of the deviation in the left section of the screen
A' : Scalar quantity of the deviation in the right section of the screen

Fig. 7-13 Example of H-SUB KEY

● Distortion Adjustment in the Horizontal Direction (1)

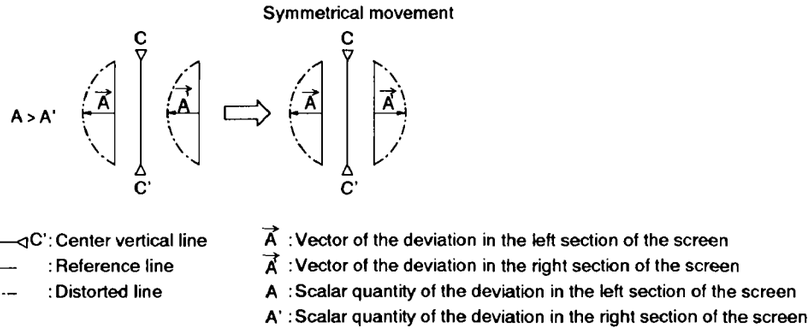
See Table 7-5 for the picture movements and general information on this adjustment.
In this adjustment, the distortion on the screen is corrected with H-M S PIN, H-SUB PIN and H-4 S PIN while moving the right and left sections in the same direction. Adjust them so that the distortion in the right and left sections is eliminated and the vertical lines in both sections are straight. If straight lines cannot be obtained, first set the picture to the status in which it is symmetrically distorted and then adjust H-MID PIN, H-PIN and H-4TH PIN.

Table 7-5 Distortion Adjustment in the Horizontal Direction (1)

Item	Deviating Picture	Corrected Picture	Deviating Picture	Attention Point on the Screen During Adjustment	Adjustment Point		Remarks
H-SUB PIN *1				B and C blocks (Especially C block)	Adjust so that any bowed lines in the attention-point blocks on the screen shown in the figure to the left are straight.	First adjust the A block with H-M S PIN and set the B block to a roughly-adjusted state. Then adjust the B and C blocks with H-SUB PIN. If the B and C blocks are distorted in waves, adjust H-4 S PIN. Repeat these adjustments until the vertical lines in both the left and right sections of the screen are straight. If straight lines cannot be obtained, move the right and left sections symmetrically as shown in Fig. 7-14 in the opposite directions to the same extent and adjust H-MID PIN, H-PIN and H-4TH PIN.	The bowed lines are corrected centering the C block on the screen. As shown in the figure to the left, the lines in the C block move more than those in the B block. The lines in the right and left sections move in the same direction.
H-M S PIN *1				A and B blocks (Especially B block)	Adjust so that any bowed lines in the attention-point blocks on the screen shown in the figure to the left are straight.		The bowed lines are corrected centering the B block on the screen. As shown in the figure to the left, the B block move more than the C block. The right and left sections move in the same direction.
H-4 S PIN				B and C blocks	Adjust so that any wavy lines in the attention-point blocks on the screen shown in the figure to the left are straight.		The wavy lines (fourth-order) are corrected in the B and C blocks on the screen. The right and left sections move in the same direction.

*1: H-SUB PIN and H-M S PIN work relative to each other. Be sure to adjust them alternately.

Note:
: Line which does not move.



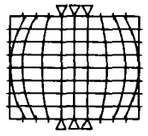
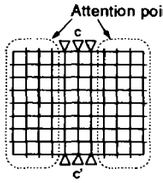
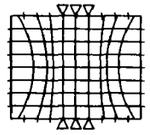
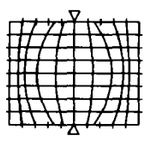
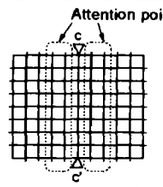
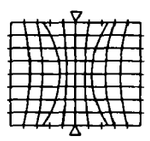
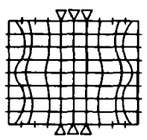
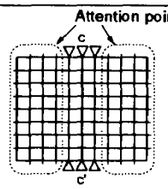
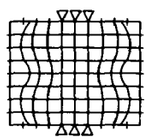
Note:
C C': Center vertical line
: Reference line
: Distorted line
$\vec{A}$: Vector of the deviation in the left section of the screen
$\vec{A}'$: Vector of the deviation in the right section of the screen
A : Scalar quantity of the deviation in the left section of the screen
A' : Scalar quantity of the deviation in the right section of the screen

Fig. 7-14 Example of Distortion Adjustment in the Horizontal Direction

● Distortion Adjustment in the Horizontal Direction (2)

See Table 7-6 for the picture movements and general information on this adjustment.
In this adjustment, the distortion on the screen is corrected with H-MID PIN, H-PIN and H-4TH PIN while moving the right and left sections of the screen symmetrically in relation to the center line. Adjust so that the distortion in the right and left sections is eliminated and the vertical lines in both sections are straight.

Table 7-6 Distortion Adjustment in the Horizontal Direction (2)

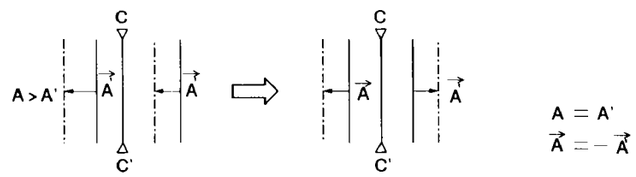
Item	Deviating Picture	Corrected Picture	Deviating Picture	Attention Point on the Screen During Adjustment	Adjustment Point		Remarks
H-PIN *1				B and C blocks (Especially C block)	Adjust so that any bowed lines in the attention-point blocks on the screen shown in the figure to the left are straight.	First adjust the A blocks with H-MID PIN and set the B blocks to a roughly-adjusted state. Then adjust the B and C blocks with H-PIN. If there is waving distortion, adjust H-4TH PIN. Repeat these adjustments until the vertical lines in both the left and right sections of the screen are straight.	The bowed lines are corrected centering the C block on the screen. As shown in the figure to the left, the C block move more than the B block. And the right and left sections move symmetrically in relation to the center line.
H-MID PIN *1				A and B blocks (Especially B block)	Adjust so that any bowed lines in the attention-point blocks on the screen shown in the figure to the left are straight.		The bowed lines are corrected centering the B block on the screen. As shown in the figure to the left, the B block move more than the C block. And the right and left sections move symmetrically in relation to the center line.
H-4TH PIN				B and C blocks	Adjust so that any wavy lines in the attention-point blocks on the screen shown in the figure to the left are straight.		The wavy lines (fourth-order) are corrected in the B and C blocks on the screen. As shown in the figure to the left, and the right and left sections move symmetrically in relation to the center line.

*1 : H-PIN and H-MID PIN work relative to each other. Be sure to adjust them alternately.

Note:
▷——◁ : Line which does not move.

● Line - Interval Adjustment in the Horizontal Direction

See Table 7-7 for the picture movements and general information on this adjustment.
In this adjustment, the intervals of the vertical lines are corrected with H - 4TH LIN, H - LIN, H - SIZE and H - SUB LIN. Converge the vertical lines in the right and left sections of the screen in the green vertical lines which have been set for reference.
The differences between H - LIN, H - 4TH LIN, H - SIZE and H - SUB LIN are shown in Table 7-8.



Note:
C ▷——◁ C' : Center vertical line
——— : Reference line
-·-·-·- : Deviating line

$\vec{A}$: Vector of the deviation in the left section of the screen
$\vec{A}$: Vector of the deviation in the right section of the screen
A : Scalar quantity of the deviation in the left section of the screen
A' : Scalar quantity of the deviation in the right section of the screen

Fig. 7-15 Example of Line - Interval Adjustment in the Horizontal Direction

Table. 7-8 Difference Between Adjustment Items

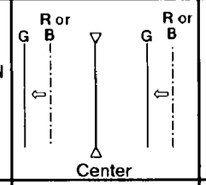
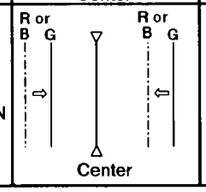
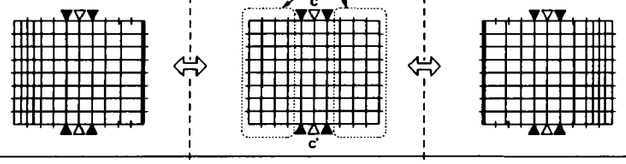
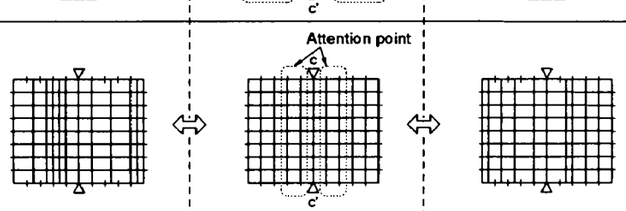
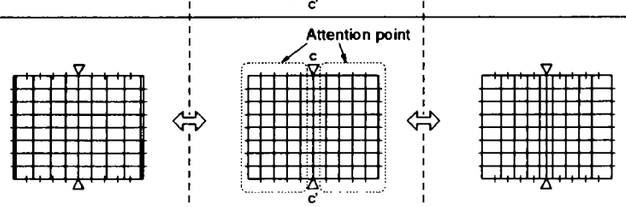
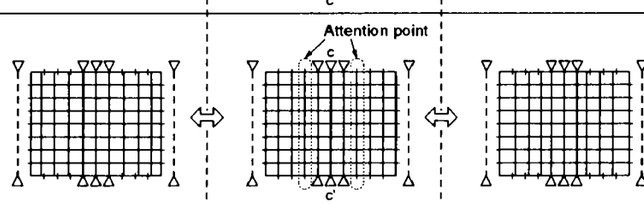
Item	Screen Example	Remarks
H-4TH LIN and H-LIN		H-4 TH LIN and H-LIN should be adjusted when the right and left sections of the screen show deviation in the same direction.
H-SIZE and H-SUB LIN		H-SIZE and H-SUB LIN should be adjusted when the right and left sections of the screen show deviation symmetrically in relation to the center line.

Table 7-7 Line-Interval Adjustment in the Horizontal Direction

Item	Deviating Picture	Corrected Picture	Deviating Picture	Attention Point on the Screen During Adjustment	Adjustment Point		Remarks
H-LIN *1				B and C blocks	Observe the movements with H-SIZE and H-SUB LIN and move the lines in the right and left sections in the opposite directions to the same extent. (See Fig. 7-15.)	First move the lines in the A blocks with H-4TH LIN and then those in the B and C blocks with H-LIN. Adjust them repeatedly until the optimum line intervals are obtained. *2	The line intervals are corrected centering the C block on the screen. As shown in the figure to the left, the lines in the right and left sections of the screen move centering the respective C block.
H-4 TH LIN *1				A and B blocks (Especially B block)	Observe the movements with H-SIZE and H-SUB LIN and move the lines in the right and left sections in the opposite directions to the same extent. (See Fig. 7-15.)		The line intervals are corrected centering the A and B blocks on the screen. As shown in the figure to the left, the lines in the right and left sections of the screen move centering the respective A and B block.
H-SIZE *2				A, B and C blocks	Converge the vertical lines in the green vertical lines which have been set for reference.	Adjust the vertical lines in the right and left sections of the screen with H-SIZE. If the lines cannot be converged in the B blocks, adjust H-SUB LIN.	The line intervals in the right and left sections (A, B and C blocks) of the screen are corrected. As shown in the figure to the left, the line intervals in the right and left sections of the screen change with the center line as the axis.
H-SUB LIN *2				B block	Converge the vertical lines in the attention-point blocks on the screen shown in the figure to the left in the green vertical lines which have been set for reference.		The line intervals in the B block on the screen are corrected. As shown in the figure to the left, the lines in the center of B block of the right and left sections move in the same manner as with H-SIZE.

*1: H-4TH LIN and H-LIN work relative to each other. Be sure to adjust them alternately.
*2: When convergence in the green lines is achieved with H-4TH LIN and H-LIN, further adjustments with H-SIZE and H-SUB LIN are not necessary.

Note:
▷——◁ : Line which does not move at all.
▶——◀ : Line which hardly moves.
▷- - - - - - - -◁ : Line which does not move out of the screen.

6. Picture Movements in Vertical Adjustments

The adjustments in the vertical direction are performed by applying the convergence correction signals to the vertical deviation to change the amount of correction. With these adjustments, the horizontal lines will move.
This section describes the picture movements and the adjusting points when adjusting each item using a cross hatch input.
See Fig. 7-16 for reference, in which each of the sections above and below the center horizontal line of the screen are divided into two blocks to describe the picture movements.

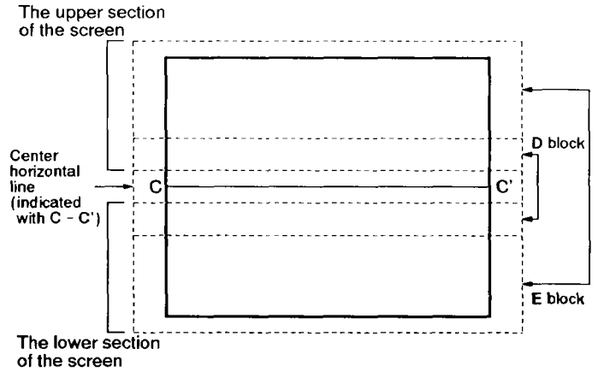


Fig. 7-16 Screen Divisions for Vertical Adjustments

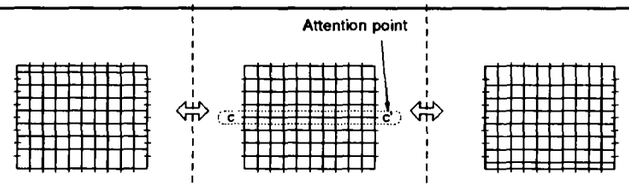
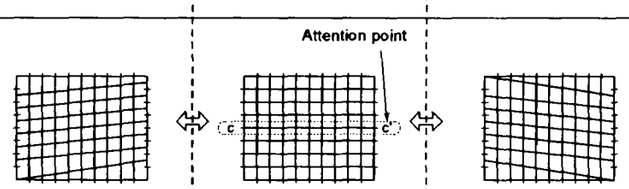
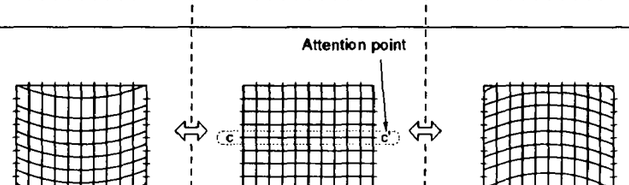
● Center-line Adjustment in the Vertical Direction

See Table 7-9 for the picture movements and general information on this adjustment.
This adjustment consists of V-SKEW, V-BOW and V-STATIC to correct the overall picture. Adjust the center horizontal line so that it is not distorted and is straight and perfectly horizontal. The center horizontal line does not move when adjusting the other items. Use the center horizontal line set through this adjustment as the reference for the other adjustments. After adjusting the center line, adjust the screen sections above and below the center line.
Note that there may be some deviation in the overall picture if this adjustment is performed alone. Finely adjust the picture with subsequent adjustments.

Caution

Be sure to adjust V-STATIC by changing the data value within the range (010 to -010) of the telop indication in CONVER ADJ mode of FACTORY ADJ mode.
If this range is exceeded, the convergence assembly may be damaged. If the adjustment is not possible within the range of 010 to -010, set the data value to 0, turn the centering magnet of the deflection yoke and fine-adjust V-STATIC.

Table 7-9 Center-line Adjustment in the Vertical Direction

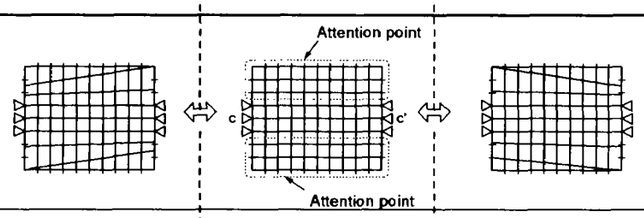
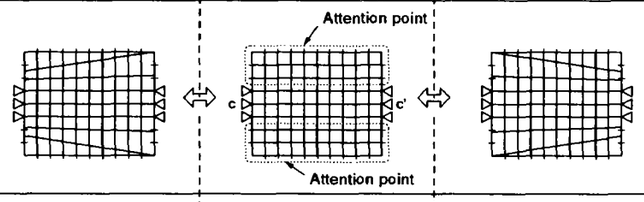
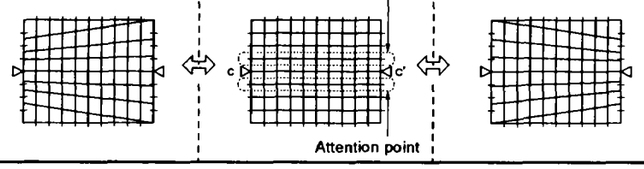
Item	Deviating Picture	Corrected Picture	Deviating Picture	Attention Point on the Screen During Adjustment	Adjustment Point		Remarks
V-STATIC *1				Center horizontal line	Move the horizontal line at the attention point on the screen shown in the figure to the left to converge it in the green line which has been set for the reference. This provides the reference position of the center horizontal line for the convergence adjustment.		The overall picture moves in parallel in the same manner as with the user-convergence adjustment.
V-SKEW				Center horizontal line	Eliminate the lean at the attention point on the screen shown in the figure to the left.	Adjust V-SKEW and V-BOW repeatedly until the center horizontal line is straight and is perfectly horizontal. Be sure to set to the range in which the D blocks can be adjusted with V-MID KEY. (For the D blocks, the distortion cannot be independently adjusted and the lean is eliminated only with V-MID KEY.)	The lean of the overall picture is corrected. As shown in the figure to the left, the overall picture is leaned.
V-BOW				Center horizontal line	Adjust so that the bowed line at the attention point on the screen shown in the figure to the left is straight.		The bowed lines over the screen are corrected. All the horizontal lines are bowed as shown in the figure to the left.

*1: V-STATIC can be shifted for convenience while adjusting the other items. Be sure to adjust the other items in consideration of the shift in V-STATIC and then readjust V-STATIC. (Be sure to shift it within the telop indication range of 010 to -010.)

● Lean Adjustment in the Vertical Direction

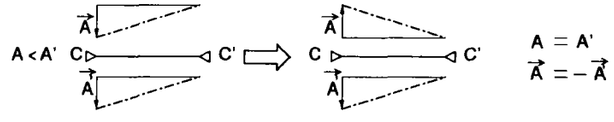
See Table 7-10 for the picture movements and general information on this adjustment.
In this adjustment, lean of the picture is corrected. Adjust V-SUB KEY, V-MID KEY and V-KEY to eliminating any lean in the upper and lower sections of the screen.

Table 7-10 Lean Adjustment in the Vertical Direction

Item	Deviating Picture	Corrected Picture	Deviating Picture	Attention Point on the Screen During Adjustment	Adjustment Point		Remarks
V-SUB KEY				E block	Adjust to eliminate the lean in the attention-point blocks on the screen shown in the figure to the left. If the lean cannot be eliminated, set the screen to the status in which V-KEY has deviation as shown in Fig. 7-17, and adjust V-KEY.	First adjust V-MID KEY so that the lean in the D block is eliminated. Then adjust V-SUB KEY and V-KEY so that the lean in the E block is eliminated. Repeat these adjustments until any lean in the upper and lower sections of the screen is eliminated.	The lean in the E block of the screen is corrected. The lines in the upper and lower sections of the screen move in the same direction.
V-KEY *1				E block	Adjust to eliminate the lean in the attention-point blocks on the screen shown in the figure to the left.		The lean in the E block of the screen is corrected. The upper and lower sections move symmetrically in relation to the center line.
V-MID KEY *1				D block	Adjust to eliminate any lean at the attention-point blocks on the screen shown in the figure to the left.		The lean in the upper and lower sections (D and E blocks) of the screen is corrected. The upper and lower sections move symmetrically in relation to the center line.

* 1: V-MID KEY and V-KEY work relative to each other. Be sure to adjust them alternately.

Note:
▷——◁ : Line which does not move.



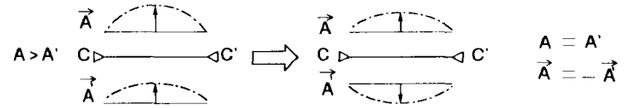
Note:
▷——◁ : Center horizontal line
——— : Reference line
-·-·-·- : Leaned line

$\vec{A}$: Vector of the deviation in the upper section of the screen
$\vec{A}$: Vector of the deviation in the lower section of the screen
A : Scalar quantity of the deviation in the upper section of the screen
A' : Scalar quantity of the deviation in the lower section of the screen

Fig. 7-17 Example of Vertical Lean Adjustment

● Distortion Adjustment in the Vertical Direction

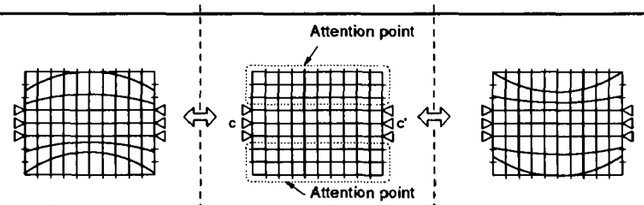
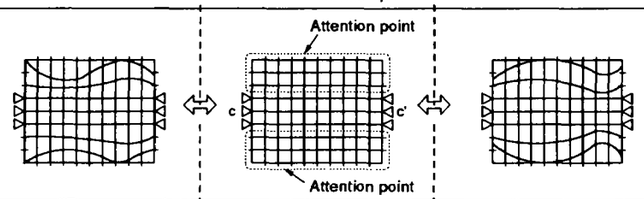
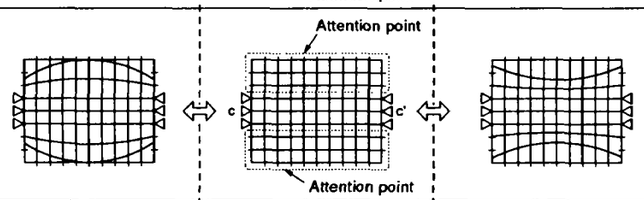
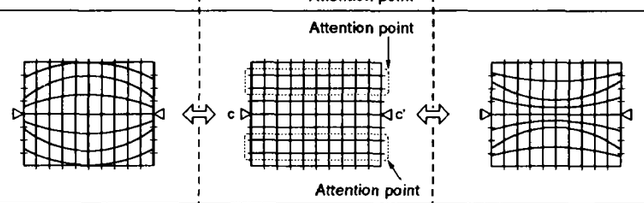
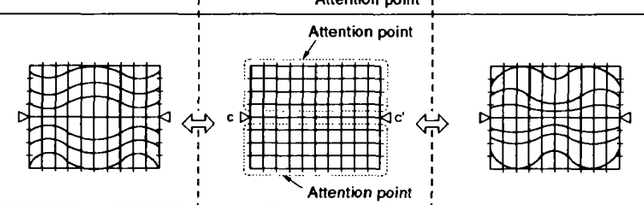
See Table 7-11 for the picture movements and general information on this adjustment.
In this adjustment, distortion on the screen is corrected. While adjusting V-SUB PIN, the upper and lower sections of the screen move in the same direction. While adjusting V-MID PIN, V-PIN, V-S C PIN and V-4TH PIN, the upper and lower sections move symmetrically in relation to the center line. Adjust them so that the distortion in the upper and lower sections of the screen is eliminated and the horizontal lines in both sections are straight.



Note:
C C' : Center horizontal line
: Reference line
: Distorted line
$\vec{A}$: Vector of the deviation in the upper section of the screen
$\vec{A}$: Vector of the deviation in the lower section of the screen
A : Scalar quantity of the deviation in the upper section of the screen
A' : Scalar quantity of the deviation in the lower section of the screen

Fig. 7-18 Example of V-SUB PIN Adjustment

Table 7-11 Distortion Adjustment in the Vertical Direction

Item	Deviating Picture	Corrected Picture	Deviating Picture	Attention Point on the Screen During Adjustment	Adjustment Point	Remarks
V-SUB PIN				E block	Adjust so that any bowed lines in the attention-point blocks on the screen shown in the figure to the left are straight. If straight lines cannot be obtained, move the upper and lower sections as shown in Fig. 7-18 in the opposite directions to the same extent from the center horizontal line. Adjust with V-PIN so that the lines are straight.	The bowed lines are corrected in the E block of the screen. As shown in the figure to the left, the upper and lower sections move in the opposite directions.
V-S C PIN				E block	Adjust so that any wavy lines in the attention-point blocks on the screen shown in the figure to the left are straight.	The wavy lines (third-order) are corrected in the E block on the screen. As shown in the figure to the left, the upper and lower sections move symmetrically in relation to the center line.
V-PIN				E block	Adjust so that any bowed lines in the attention-point blocks on the screen shown in the figure to the left are straight.	The bowed lines are corrected in the E block on the screen. As shown in the figure to the left, the upper and lower sections move symmetrically in relation to the center line.
V-MID PIN				D block and the center line side of E block. (Especially the center line side of the E block)	Adjust so that any bowed lines in the attention-point blocks on the screen shown in the figure to the left are straight.	The bowed lines are corrected on the center line side of E block on the screen. As shown in the figure to the left, the upper and lower sections move symmetrically in relation to the center line.
V-4TH PIN				D and E blocks	Adjust so that any wavy lines in the attention-point blocks on the screen shown in the figure to the left are straight.	The wavy lines (fourth-order) are corrected in the upper and lower sections (D and E blocks) of the screen. As shown in the figure to the left, the upper and lower sections move symmetrically in relation to the center line.

First adjust D block with V-MID PIN while setting the center-line side of E blocks to a roughly-adjusted state.
Then adjust E block with V-PIN.
If there is waving distortion, adjust V-4TH PIN and V-S C PIN.
Repeat these adjustments until all the horizontal lines in both upper and lower sections of the screen are straight.

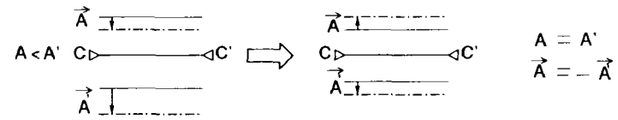
Note:
: Line which does not move at all.

● Line-Interval Adjustment in the Vertical Direction

See Table 7-12 for the picture movements and general information on this adjustment.
In this adjustment, the intervals of the horizontal lines in the upper and lower sections of the screen are corrected with V-LIN, V-SIZE and V-SUB LIN. Converge the horizontal lines in the upper and lower sections of the screen in the green horizontal lines which have been set for reference.
The differences between V-LIN, V-SIZE and V-SUB LIN are shown in Table 7-13.

Table. 7-13 Difference Between Adjustment Items

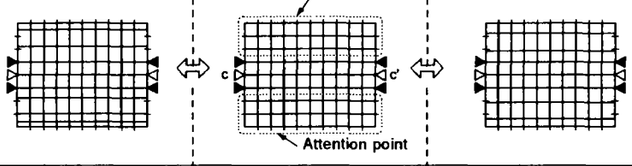
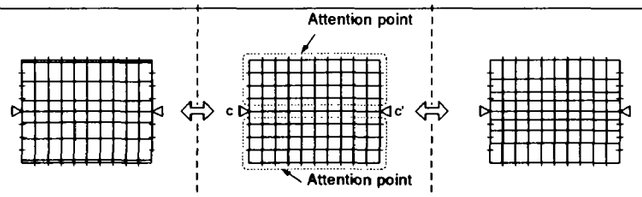
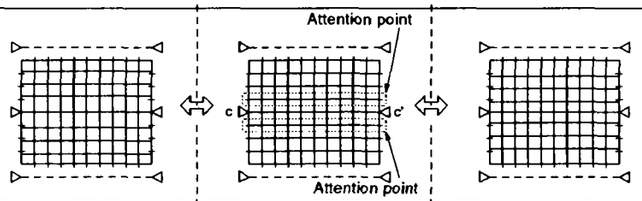
Item	Screen Example	Remarks
V-LIN	R or B G Center R or B G	V-LIN should be adjusted when the upper and lower sections of the screen show deviation in the same direction.
V-SIZE and V-SUB LIN	R or B G Center R or B G	V-SIZE and V-SUB LIN should be adjusted when the upper and lower sections of the screen show the upper and lower sections move symmetrically in relation to the center line.



Note:
: Center horizontal line
: Reference line
: Deviating line
$\vec{A}$: Vector of the deviation in the upper section of the screen
$\vec{A}$: Vector of the deviation in the lower section of the screen
A : Scalar quantity of the deviation in the upper section of the screen
A' : Scalar quantity of the deviation in the lower section of the screen

Fig. 7-19 Example of V-LIN Adjustment

Table 7-12 Line-Interval Adjustment in the Vertical Direction

Item	Deviating Picture	Corrected Picture	Deviating Picture	Attention Point on the Screen During Adjustment	Adjustment Point		Remarks
V-LIN				E block	Observe the movements with V-SIZE and V-SUB LIN and move the lines in the upper and lower sections in the opposite directions to the same extent. (See Fig. 7-19.) When the convergence on the green lines is achieved, further adjustments with V-SIZE and V-SUB LIN are not necessary.		The line intervals are corrected centering the D and E blocks on the screen. As shown in the figure to the left, the lines in the upper and lower sections of the screen move centering the respective E block.
V-SIZE				D and E blocks	Converge the horizontal lines in the green horizontal lines which have been set for the reference.	Adjust the horizontal lines in the upper and lower sections of the screen with V-SIZE. If the lines in the D block cannot be converged, adjust V-SUB LIN.	The line intervals in the upper and lower sections (D and E blocks) of the screen are corrected. As shown in the figure to the left, the line intervals in the upper and lower sections of the screen change with the center line as the axis.
V-SUB LIN				D block	Converge the horizontal lines in the attention-point sections in the green horizontal lines which have been set for reference.		The line intervals in the D block on the screen are corrected. As shown in the figure to the left, the lines in the upper and lower sections move centering the respective D block in the same manner as with V-SIZE.

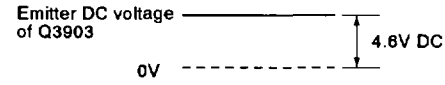
Note:
: Line which does not move at all.
: Line which hardly moves.
: Line which does not move out of screen.

7.8 WHEN R, G OR B CRT DRIVE ASSY WAS REPAIRED OR REPLACED

- White balance ought to provide the best picture.
  If not, adjust the white balance as follows.

Step No.	Adjustment Item	Input Signal	Adjustment Point	Adjustment Procedure
1	White balance adjustment	Color bar signal without color signal	Screen (VR1) VR1003 (R) Drive VR1002 (B) VR (V)	• Adjust the screen VRs (red or blue) so that the dark part of the screen becomes gray. Do not move the screen VR (green). • Adjust the drive VRs (red or blue) so that the bright part of the screen becomes white.

7.9 WHEN FRONT CONTROL ASSY WAS REPAIRED

Step No.	Adjustment Item	Input Signal	Adjustment Point	Adjustment Procedure
1	DPO sensitivity adjustment	—	VR3901 (F)	Note : This adjustment is to set the sensitivity of the DPO sensor. Adjust the value as per the customer's request. The adjusting procedure at the factory is shown below for your reference. • Illuminate the DPO sensor from the rectangular position to the sensor surface using an incandescent lamp with luminance of 50 lux at the sensor surface. • Adjust the emitter voltage of Q3903 on the FRONT CONTROL assy becomes 4.6V ± 0.1V. 

7.10 WHEN FRONT CONTROL ASSY WAS REPLACED

- No adjustment required.

7.11 WHEN DIGITAL ASSY WAS REPAIRED OR REPLACED

- White balance ought to provide the best picture.
  If not, adjust the white balance as follows.

Step No.	Adjustment Item	Input Signal	Adjustment Point	Adjustment Procedure
1	White balance adjustment	Color bar signal without color signal	Screen (VR1) VR1003 (R) Drive VR1002 (B) VR (V)	• Adjust the screen VRs (red or blue) so that the dark part of the screen becomes gray. Do not move the screen VR (green). • Adjust the drive VRs (red or blue) so that the bright part of the screen becomes white.
2	H. AFC free run adjustment (Adjust only when repairing)	—	L4004 (D)	Adjust so that the frequency of pin 10 of IC4005 becomes 15.73kHz ± 50Hz.

7.12 WHEN CRT ASSY R, G, OR B WAS REPLACED

- The CRT assy R, G, B replacement procedure is described in Section"8. Replacing the CRT assy".
- When one or two tubes are replaced, match the new tubes with the remaining tube. If all three tubes are replaced, first adjust G, and then match the other two tubes with the G tube.

Step No.	Adjustment Item	Input Signal	Adjustment Point	Adjustment Procedure
1	Deflection yoke lean adjustment	Cross signal (or generate a test cross signal for convergence adjustment by applying a free signal)	Deflection yoke mounting position of replaced color (CRT assy) (left and right lean)	Note : This adjustment is required when a CRT assy and deflection yoke were replaced. ● Set the screen size to full mode. ● Loosen the fixing screw of the deflection yoke for the color to be replaced and turn the adjustment point right and left so that the lean parts of the vertical and horizontal lines at the center of the screen align with the lines of a color not replaced. ● After adjustment, tighten the fixing screw for the deflection yoke.
2	Screen center adjustment	Cross signal (or generate a test cross signal for convergence adjustment by applying a free signal)	Centering magnet of the deflection yoke of replaced color (CRT assy) (Refer to Fig. 7-20.)	Note : This adjustment is to adjust the center point of the screen when a CRT assy and deflection yoke were replaced. For red or blue adjustment, turn FACTORY ADJ mode ON and then OFF to place the convergence POSITION at the center of the adjustable range. ● Set the screen size to full mode. ● Move the centering magnet of the deflection yoke for the replaced color so that the horizontal and vertical lines at the center of the screen align with the lines for a color not replaced.
3	Focus VR adjustment	Cross hatch	Focus VR (VR1)	● Turn the focus VR for best focusing. ● Repeat adjustments for the Lens assy and focus VR.
4	Convergence adjustment	Cross hatch	Adjustment using the remote control unit	● Adjust so that the green cross hatch display normally appears on the screen with only the green CRT drive activated. ● Adjust the red line so that it aligns with the green line on the cross hatch screen with the green and CRT drives activated. ● Adjust the blue line so that it aligns with the green line on the cross hatch screen with the green and CRT drives activated. Note : For details on the convergence adjustment, see section "7.7.2. Convergence Adjustment".
5	White balance adjustment	Color bar signal without color signal	Screen VR (VR1) VR1003 (R) } Drive VR VR1002 (B) }	● Adjust the screen VRs (red or blue) so that the dark part of the screen becomes gray. Do not move the screen VR (green). ● Adjust the drive VRs (red or blue) so that the bright part of the screen becomes white.
6	PIONEER standard settings	Adjust as described in steps 7 thru 10 in Section 7.4.1.		

7.13 WHEN LENS ASSY WAS REPLACED

Step No.	Adjustment Item	Input Signal	Adjustment Point	Adjustment Procedure
1	Focus adjustment of lens assy	Cross hatch signal	Lens assy mounted to replaced CRT assy	• Remove the front cover panel (SD-T43w1 only). • Move the lens assy left and right as shown in Fig. 7-22 until the best focusing is obtained.
2	Convergence adjustment	Cross hatch signal	Adjustment using the remote control unit	• Adjust so that the green cross hatch display normally appears on the screen with only the green CRT drive activated. • Adjust the red line so that it aligns with the green line on the cross hatch screen with the green and CRT drives activated. • Adjust the blue line so that it aligns with the green line on the cross hatch screen with the green and CRT drives activated. Note : For details on the convergence adjustment, see section "7.7.2. Convergence Adjustment".

7.14 WHEN OTHER ASSEMBLIES WERE REPAIRED OR REPLACED

- No adjustment required.

7.15 ANODE VOLTAGE MEASURING METHOD

Disconnect the FBT anode cable as outlined in Fig. 7-20.
Measure at the point where the cable enters the FBT.

Caution: Take extra precaution when measuring this high voltage. High voltages are also present in surrounding circuit boards (CRT DRIVE assy, POWER SUPPLY assy).

SERVICEMAN WARNING

Before removing the anode cable, turn off the power, unplug the AC plug and let the unit discharge for more than 1 minute.

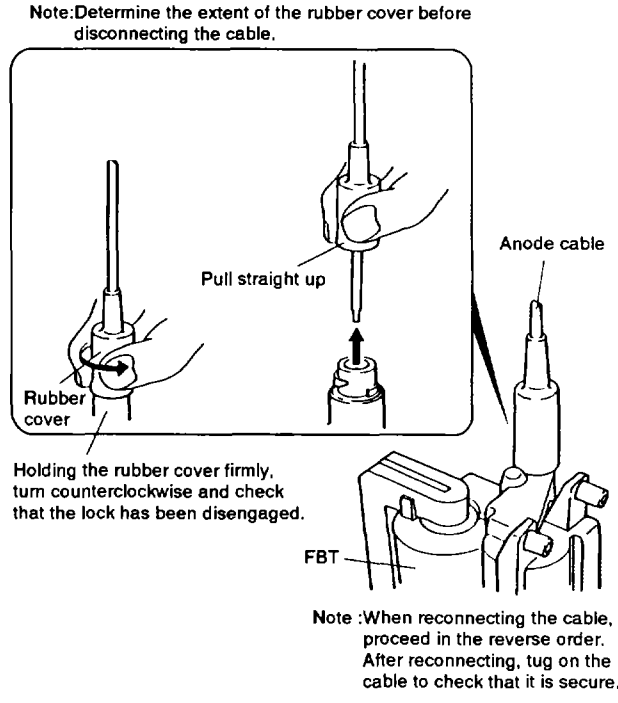
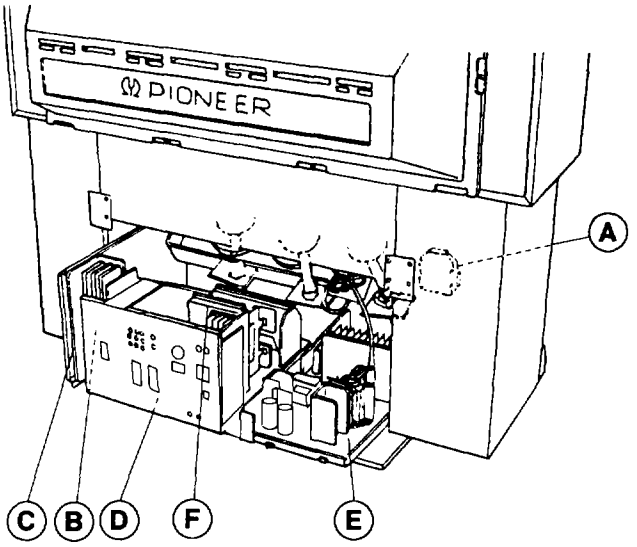
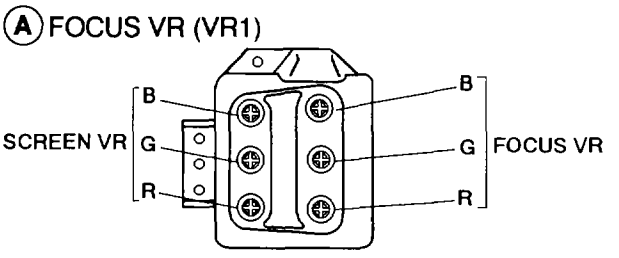
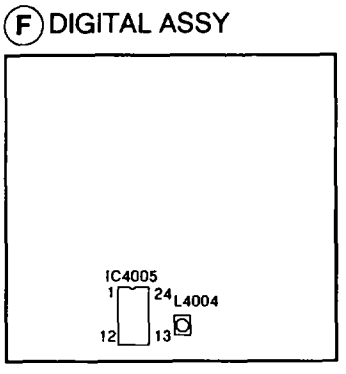
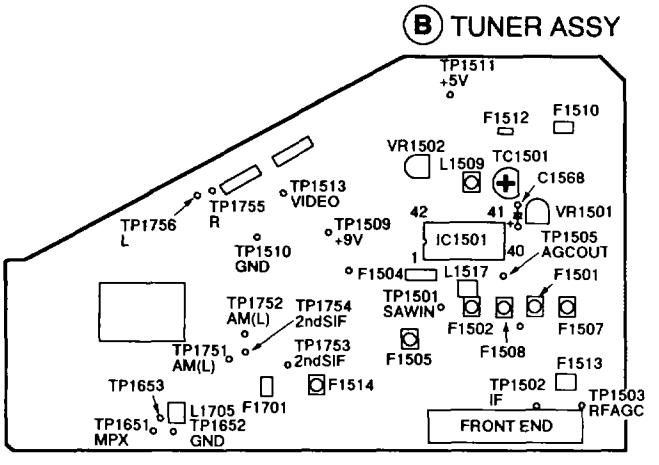

Note:Determine the extent of the rubber cover before disconnecting the cable.
Anode cable
Pull straight up
Rubber cover
Holding the rubber cover firmly, turn counterclockwise and check that the lock has been disengaged.
FBT
Note :When reconnecting the cable, proceed in the reverse order. After reconnecting, tug on the cable to check that it is secure.

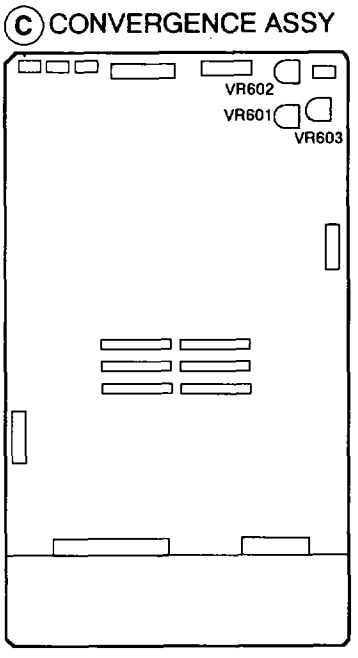
Fig. 7-20 Disconnecting the anode cable

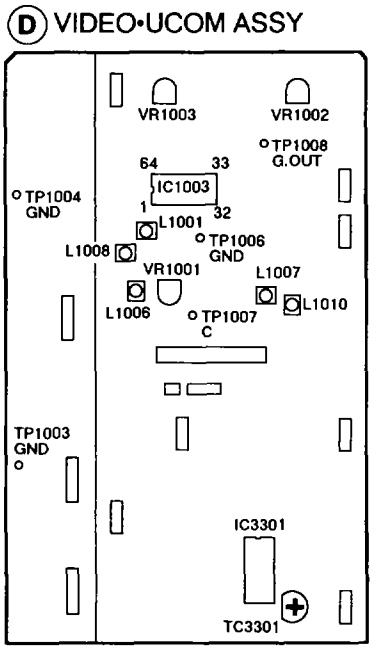












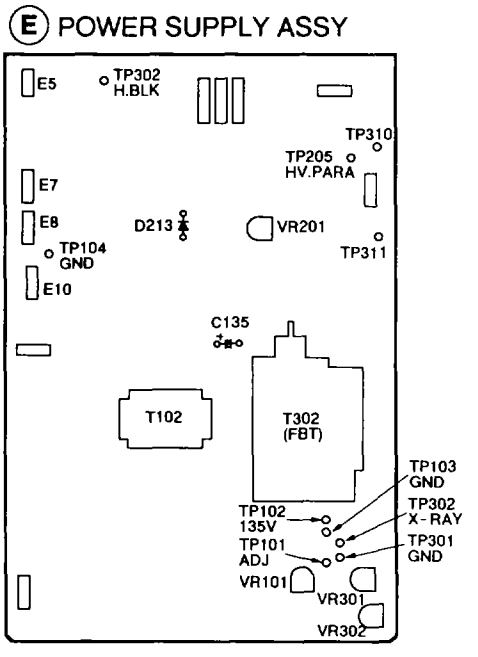
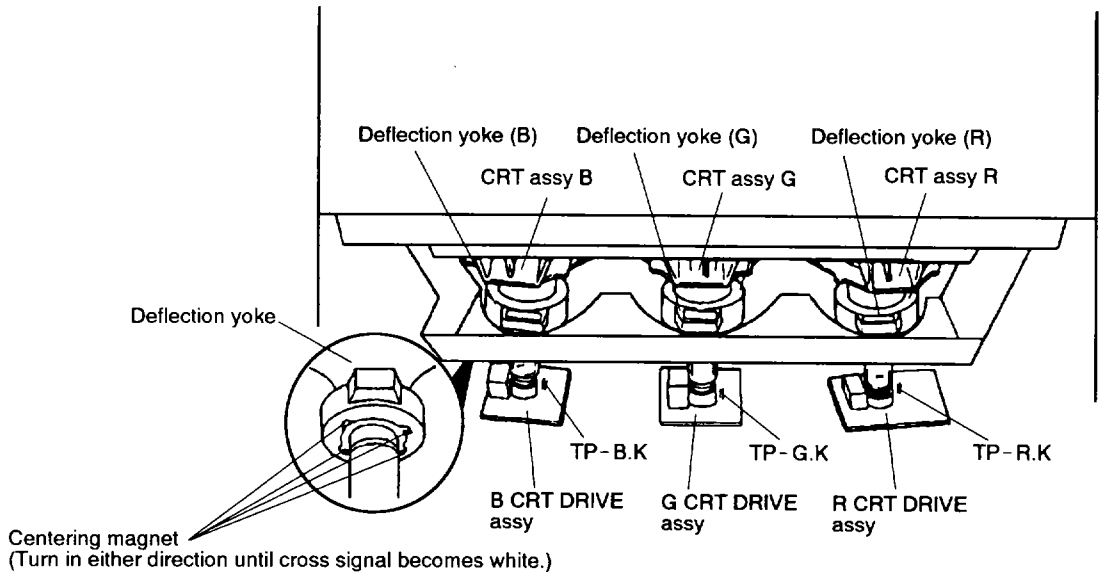


Fig. 7-21 Adjustment point (1)

Ⓖ FRONT CONTROL ASSY

VR3901 Q3903
Emitter



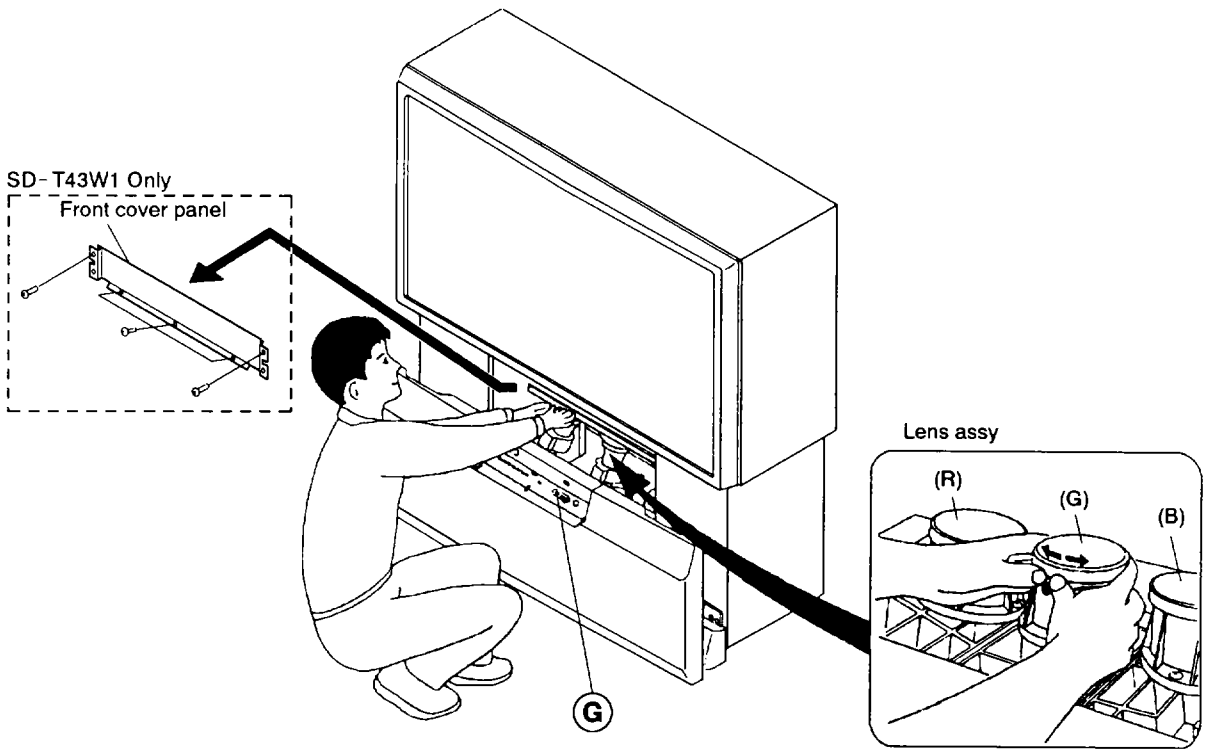


Fig. 7-22 Adjustment point (2)

8. REPLACING THE CRT ASSY

Serviceman Warning
When replacing the CRT assy, turn off the power, unplug the AC plug and let the unit discharge for more than 1 minute.

The anode cables of the CRT assy R, G, and B in PROJECTION MONITOR RECEIVER are connected in series as shown in Fig. 1.
When replacing the CRT assy, the anode cable have to be cut.

Note: Since the anode cables for the CRT assy to service supplies are only available in half lengths, either cut longer lengths, or join older lengths of cable to ensure that the original cable length is used.

Table 1 Cable disconnecting methods

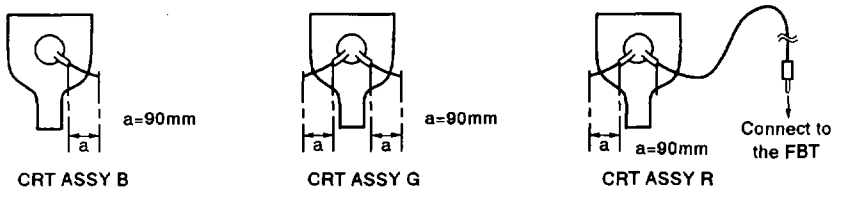
Cable	Replacement CRT assembly		
	When CRT assy B is replaced	When CRT assy G is replaced	When CRT assy R is replaced
Cable ⓐ	——	——	Disconnect the anode cable from the FBT. (Refer to page 145.)
Cable ⓑ	Leave it as is	Cut a place 20mm from the exact center towards the CRT assy G	Cut a place 20mm from the exact center towards the CRT assy R
Cable ⓒ	Cut a place 20mm from the exact center towards the CRT assy B	Cut a place 20mm from the exact center towards the CRT assy G	Leave it as is

Note : Do not cut other cables by mistake.

8.1 WHEN REPLACING THE CRT ASSY

Unplug the AC plug and let the unit discharge for more than 1 minute, then cut the anode cable according to table 1.

Each CRT assy supplied as a spare part is as shown below.



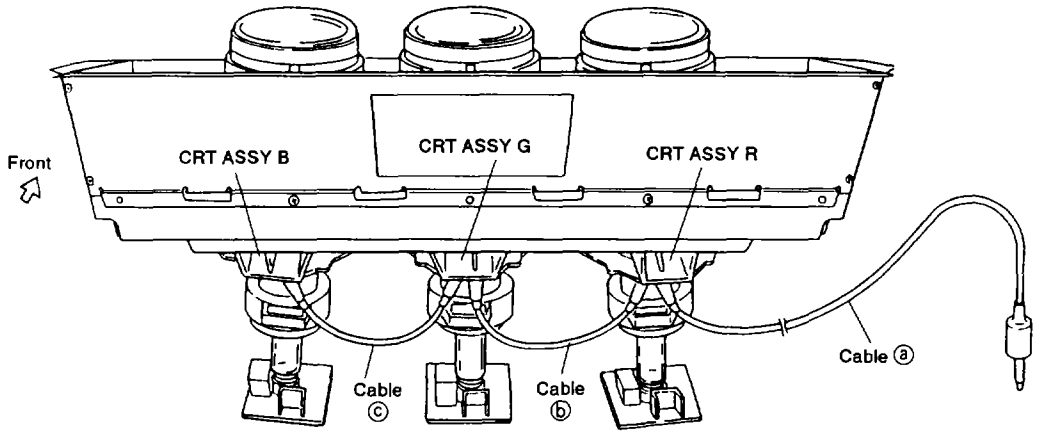
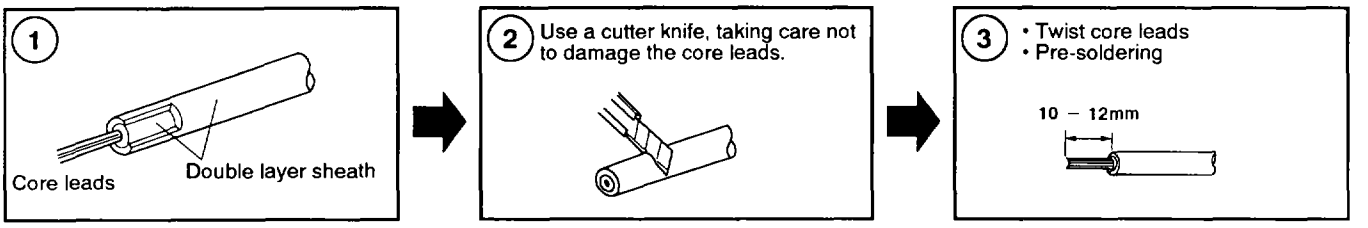


Fig. 1 Connection diagram of the each CRT assemblies

8.2 ANODE CABLE STRUCTURE AND SHEATH PEELING

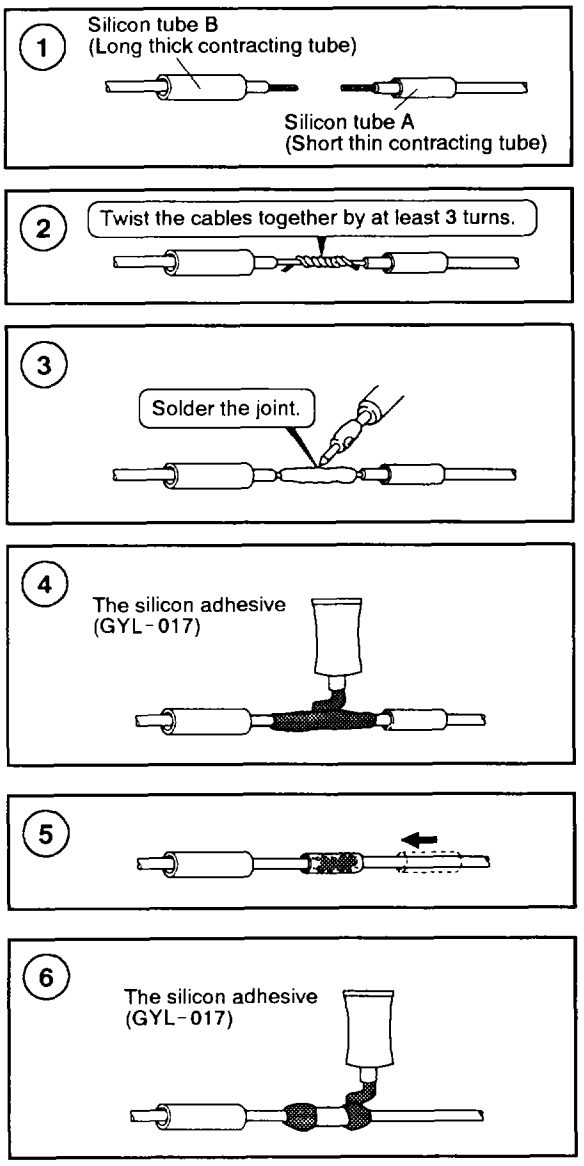


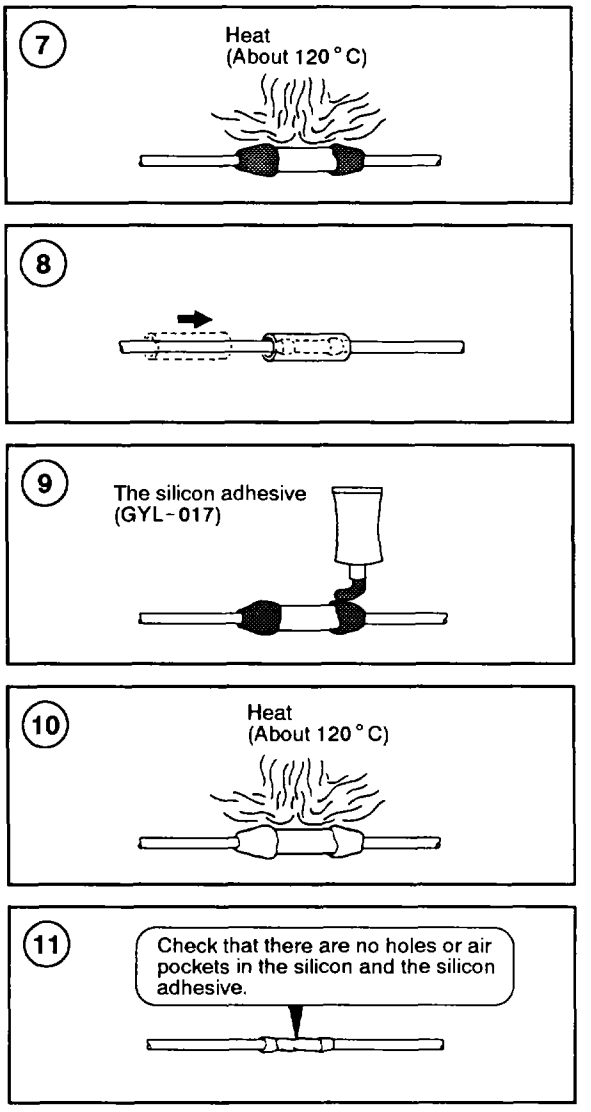
8.3 ANODE CABLE JOINING PROCEDURE

The silicon tube is packed with CRT ASSY. For the silicon adhesive, be sure to use silicon adhesive part number GYL-017.

• **CAUTION** When connecting the anode cable, pay attention to the following.

- Take care not damage the anode cable sheath.
- Insulate the cable leads from other parts using the silicon adhesive and the silicon tube.
- Apply the silicon adhesive so that those are not air gaps.





9. WIRING DIAGRAM

Reconnect any disconnected lead wires of the Projection monitor receiver.

Fig. 9 - 1 show the important points for connection of the lead wires. You may find that they were connected differently. Be sure reconnect the lead wires as they were.

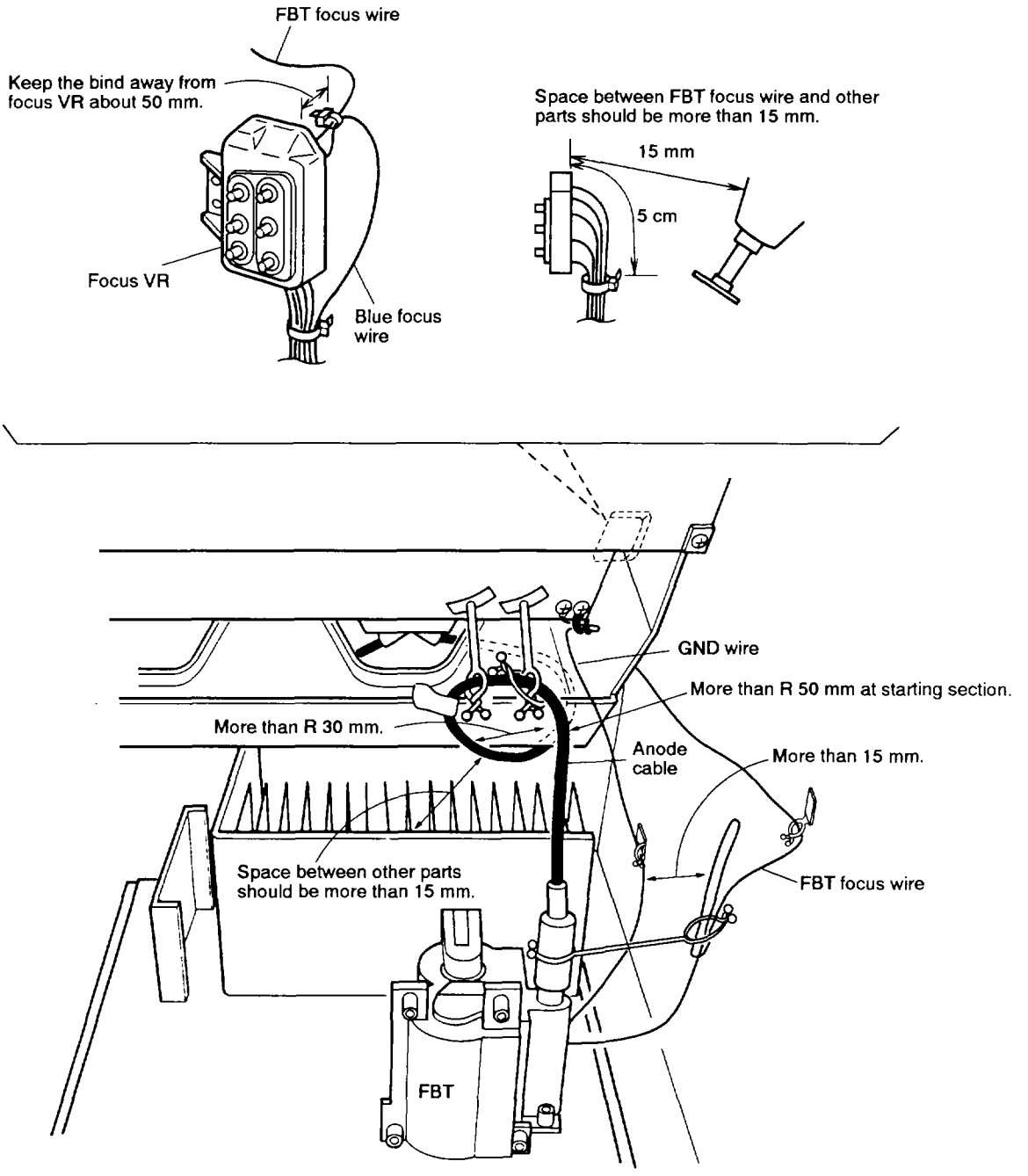
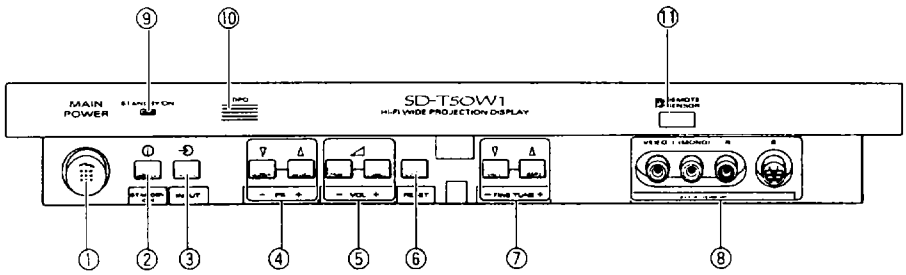

FBT focus wire
Keep the bind away from focus VR about 50 mm.
Focus VR
Blue focus wire
Space between FBT focus wire and other parts should be more than 15 mm.
15 mm
5 cm
GND wire
More than R 50 mm at starting section.
More than R 30 mm.
Anode cable
More than 15 mm.
Space between other parts should be more than 15 mm.
FBT focus wire
FBT

Fig. 9 - 1 Wiring diagram

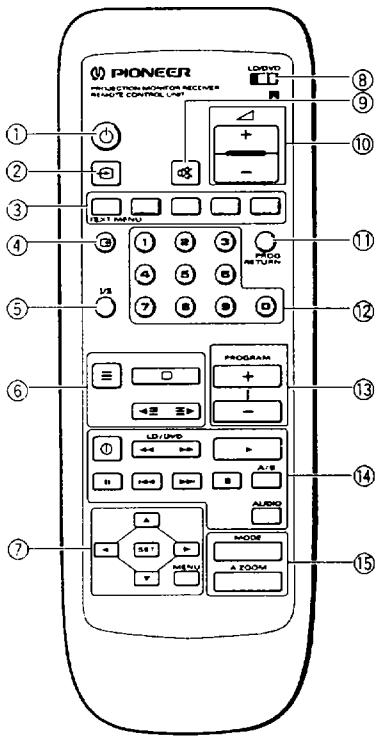
10. PANEL FACILITIES

Front panel



No.	Name	Function
①	MAIN POWER switch	: Switches the power between STANDBY and OFF.
②	⏻ STANDBY/ON button	: Switches the power between ON and STANDBY.
③	INPUT selector button	: Switches input sources.
④	PR (program) selector buttons	: Switches program numbers.
⑤	VOL (volume) buttons	: Adjust the volume.
⑥	RESET button	: Returns to the setting at factory.
⑦	FINE TUNE buttons	: Finely adjust (fine tuning) the reception frequency.
⑧		: Used to connect the video camera, etc.
⑨		: Displays the power state. (Red: STANDBY Green: ON)
⑩		: Detects the brightness of the room.
⑪		: Receives the remote control unit signals.

Remote control unit



No.	Name
①	⏻ Standby button
②	Input selector button
③	TEXT MENU selector buttons
④	Information button
⑤	I/II sound mode selector button
⑥	Teletext operation buttons
⑦	Menu operation buttons MENU: Turns on/off the control menu. ◄►▲▼: Moves the cursor on the control menu. SET: Used to execute operations on the control menu and select the mode.
⑧	LD/DVD selector switch
⑨	Mute button
⑩	Volume button
⑪	PROG (program) RETURN button
⑫	Number buttons
⑬	PROGRAM selector buttons
⑭	LD/DVD operation buttons
⑮	Zoom mode selector buttons

11. SPECIFICATIONS

Display section

Reception system .. American TV standard NTSC system
Screen size ..... 50" (SD-T50W1/SL)
43" (SD-T43W1/SL)
Aspect ratio 16:9
CRT ..... 7" High focus CRT x 3
Actual viewing angle ..... Horizontal H = 140°
Vertical V = 50°
Input terminals ..... 2 Scarts
(1: with AV output, 1: with TV output)
2 + 1 (Front) AV Cinch
2 + 1 (Front) Y/C plug
Output terminals ..... 1 AV Cinch
1 Variable audio output (Cinch)
Input signal ..... Video signal: 1.0 Vp-p ±3 dB
Input impedance ..... Video input: 75 Ω ±10%
Audio input: 10 kΩ or more
Input signal polarity ..... Synchronized negative
Output terminal signal ratings:
Output terminals ..... Video signal: 1 Vp-p (75 Ω load)
Audio signal: 500 mV rms (100% modulation)
Output impedance ..... Video output: 75 Ω ±10%
Audio output: Less than 1 kΩ

Tuner section

Circuit type ..... Video signal detection:
PLL detection
PLL Digital Synthesizer system
Audio multiplex: ..... NICAM, MTS,
GERMAN ANALOG 2 CARRIER

Reception channels

NTSC:			
US VHF:	CH2-CH13	UHF:	CH14-CH69
US CATV STD:	CH2-W+84	US CATV HRC:	CH1-W+84
Taiwan VHF:	CH7-CH13	Taiwan UHF:	CH33-CH48
PAL/SECAM:			
CCIR VHF:	CH2-CH12	UHF:	CH21-CH69
CCIR CATV:	E2-E12, S1-S41, S22H-S34H		
Belgium:	U1-U5, M1/7-M10/7, M1/8-M8/8, X-Z+2		
France:	FB-FC, F1-F6, K4-K9, B-Q		
Italy:	A-H2	New Zealand:	CH1-CH11
OIRT:	R1-R12	China:	CH1-CH57
Australia:	CH0-CH11	Ireland:	A-J
UK:	CH21-CH69		

Antenna terminal ..... ANTENNA terminal,
TV coaxial 75 Ω UNBAL

Electrical section, miscellaneous

Power requirements
..... AC 110/120-127/220-230/240 V, 50/60 Hz
Power consumption ..... 330 W
External dimensions
..... 1,240 (W) x 615 (D) x 1,215 (H) mm (SD-T50W1/SL)
..... 1,092 (W) x 529 (D) x 1,172 (H) mm (SD-T43W1/SL)
Weight of main unit ..... 90 kg (SD-T50W1/SL)
..... 71 kg (SD-T43W1/SL)

Amplifier section

Tone control ..... BASS, TREBLE
Built-in speaker system ..... 50 inch 12cm x 2, 6 cm x 2
43 inch 12 cm x 2
External speaker impedance ..... 8-16 Ω

Wireless remote control unit

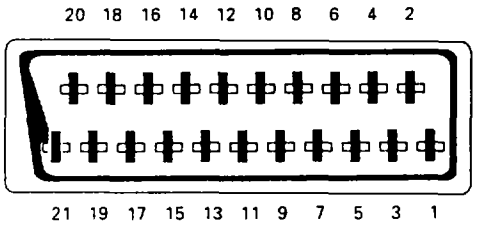
Operation system: Infrared remote control system
Power source: Two AAA/R03 1.5 V dry cell batteries

Accessories

Operating instructions 1
Remote control unit 1
AAA/R03 dry cell batteries 2
Power cords 2
Caster pedestals 4
VCR fixed band (SD-T43W1/SL only) 1

NOTE:
Specifications and design are subject to possible modifications without notice due to improvements.

Assignment of connections for EURO-AV sockets



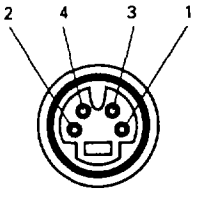
EURO-AV1

1 Audio output B
2 Audio input B
3 Audio output A
4 Audio ground
5 Blue ground
6 Audio input A
7 Blue
8 Switching voltage
9 Green ground
10 -
11 Green
12 -
13 Red ground
14 -
15 Red or chroma signal with S-Video
16 Blanking signal
17 Video output ground
18 Video input ground
19 Video output
20 Video input or luminance with S-Video
21 Screening or ground

EURO-AV2

1 Audio output B
2 Audio input B
3 Audio output A
4 Audio ground
5 -
6 Audio input A
7 -
8 -
9 -
10 -
11 -
12 -
13 -
14 -
15 Chroma signal with S-Video
16 -
17 Video output ground
18 Video input ground
19 Video output
20 Video input or luminance with S-Video
21 Screening or ground

Assignment of connections for S-VIDEO socket



1 Ground
2 Ground
3 Luminance
4 Chroma signal